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CANADIAN GEOGRAPHICAL JOURNAL

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Spring break-up.

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Head Office: 54 Park Ave., Ottawa 4
(Tel. CE. 6-7493)

SPECIAL REPRESENTATIVES:
F. A. DALLYN
1000 St. Antoine St., Montreal 3
(Tel. UN. 6-5285)
21 King Street East, Toronto

GEORGE F. HENDERSON
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The Lighthouses MALAK

"Whether on high the air be pure, they shine along the yellowing sunset, and all night among the unnumbered stars of God they shine: or whether fogs arise and far and wide the low sea level drown—each finds a tongue and all night long the tolling bell resounds; so shine, so toll, till night be overpast, till the stars vanish, till the sun return, and in the haven rides the fleet secure."—R. L. Stevenson.

Nova Scotia Has Many Lights

by WILL R. BIRD

It was a beautiful morning in July as we drove along Nova Scotia's South Shore and as we reached Shag Harbour gulls rose in clouds around the wharf where fish were being unloaded. Roadside boulders and many trucks made parking a chore but we found space and then I walked over plank slippery with fish scales to where the men were working. "Can I hire a boat to go to Bon Portage?" I asked.

Men glanced at each other, looked away, suggested I try someone up shore or down shore, though boats were moored everywhere one looked. So I had to give up and went back to the roadway, asked questions at a store and was directed to a home where a man was repairing his wife's washer. Yes, he would go, but it was obvious that he was reluctant. The fishermen will go out in dirty weather and spend hard hours with handlines and net, earn eight or nine dollars in a long day, but they are averse to earning five dollars in an hour's run to the island. It is against their grain to use their boats as ferries for sight-seeing parties.

These men, however, are the salt of the earth. Once we were on our way our fisherman was kindness itself, and went a mile out of his way to borrow a dory by which we could land more easily as there was no wharf on Bon Portage. As we drew near the shore, we saw a figure working near the wide ramp of peeled poles on which lightkeepers haul their craft, and soon the man was waving us in and indicating that he would assist the passengers to land.

We swung down into the dory and were rowed to the poles. The dory was caught and held and my wife stepped bravely over and managed to catch her balance on the slippery cross-bars, mainly because Morrill Richardson, keeper of the light, and husband of the famous author of *We Keep a Light* and *Desired Haven*, was there to catch her as she alighted on the poles. We managed to make our way to the top end of the ramp and then were back on the good earth. Morrill was taking a load of wood to the house and we walked the trail behind the tractor enjoying the clean fresh air and sense of isolation. Raspberries fairly reddened the sides of the trail and we ate handfuls. Broken lobster traps and debris of the sea littered the stony beach and was jammed and crammed into every opening of clumps of scrub bush farther inshore. We could see how far great waves had driven inland, often crossing the road we travelled, and it gave us a new awareness of the might and fury of the Atlantic during fall and winter storms.

Soon we were arriving at a fine new house and being greeted with the warmth that has made the Richardsons famous. We had lunch, finishing off with heaping dishes of raspberries and cream, and then looked at Evelyn Richardson's scrapbooks, and, under her guidance, visited the lighthouse, climbed the tower and, with the aid of powerful binoculars, surveyed the realm of sea and islands and coastline. It thrilled me to be looking over the seascape that Mrs. Richardson has described so well in *We Keep a Light**:

"This hour of 'lighting up' is a time that I enjoy. I love to watch the beams of near-by lights take their places like friendly stars in the twilight. Though I know only one of the keepers, the lights themselves are old friends. Off there, about twelve miles to the West, is Seal Island's rather irregular beam; to the south-west is nothing but unbroken sea and sky, but eight miles to the south-east is Cape Sable's bright white flash; not so far away and almost due east glows West Head's warm red; while nearest to us, only two miles away, is the twinkling little harbour light of Emerald Isle. Then to the north, snug and protected by the outlying capes and islands, the small fixed light of Wood's Harbour glows redly.

"On fine evenings these add to the beauty of sunset skies and placidly shimmering sea; but Oh! on stormy, wind-tossed nights, when the lighthouse rocks and the metal lantern vibrates like a taut wire under the rough

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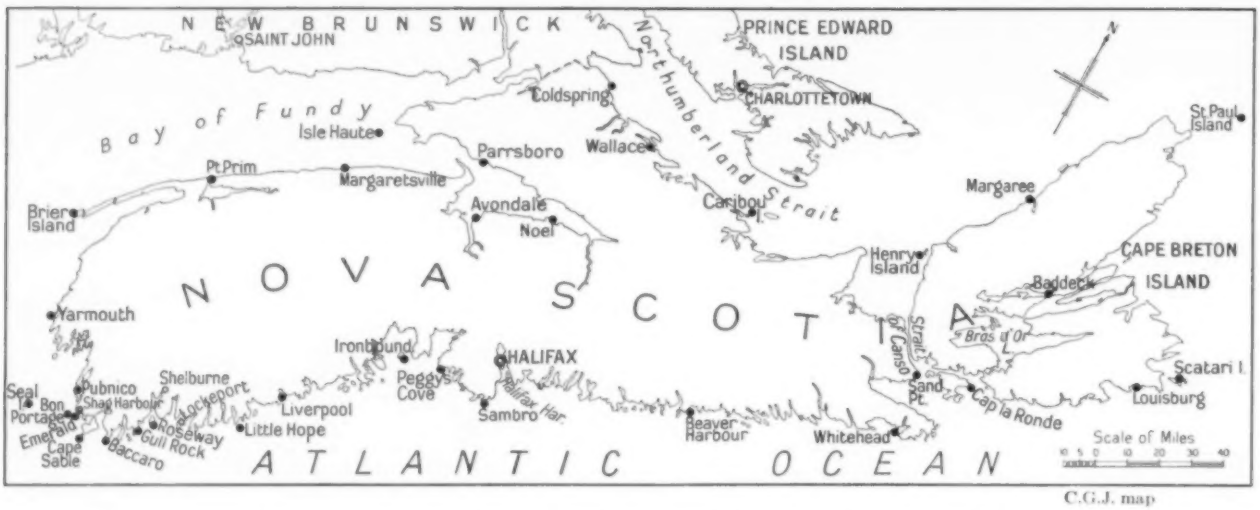


C.G.J. map

searching fingers of the wind, they are the friendly smiles of comrades in the struggle against wind and sea, and as our lamps flash out through the murk, I am glad they are adding their bit to the forces that fight the darkness and storm. Even when fog or driving rain and snow shut away everything but the reflected beams of our own lamps, it is something to know that the other lights, like ours, still flash their messages from towers standing as sentinels, although I cannot see them."

If anyone should know the sea and lights, it is Evelyn Richardson. Her great-grandfather was granted the post of lightkeeper at Cape Forchu as a reward for his services in the Navy, and his son, who succeeded him, was born in the lighthouse. Her grandmother on her mother's side kept Emerald Light. Her daughter is the wife of the lightkeeper at Cape Sable.

Mrs. Richardson stood in the tower and pointed to remnants of old wrecks, and told us the stories of big storms and trouble. In July, 1922, a three-masted schooner, *Win The War*, stranded on the outer shore of Bon Portage. The crew landed safely at midnight and were cared for by the keeper of that time and his wife. When in 1929 the Richardsons took over the light, most of the schooner had broken up and washed away but a large section remained on the rocky beach above the tide-line. Its heavy planks were still bright and the wreckage formed a sort of frame in which visitors to the island liked to be photographed. There were burnt places in the wreckage where men from the shore had burned the wood in order to remove sound iron bolts. A winter storm broke off part of the hull and carried it farther along the shore and Hurricane Edna completed the job by lifting the remnant and slamming it against trees a hundred yards inland. So there the hull rots, as we saw it, among storm-killed brushwood.

At noon, 16 September 1898, the Bon Portage lightkeeper was at dinner with his family. A dense fog hung over everything and the ebb was running strong. Suddenly the family heard a tremendous crash and rushed outdoors. The steel bow of a large steamer loomed through the fog above the ledges of the point, almost in their front yard. It was the steamer *Express* and as it settled with the ebb large rocks penetrated the engine-room floor, the fires were extinguished and the ship filled to the upper deck. There were fifty passengers but the crewmen made "chairs" by clasping hands above wrists and carried all ashore over the slippery rocks, except one prudish spinster who waded and sprawled among the weeds and stones in order to save her pride. The people saved were fed, and then boats came to salvage what they could. Winter storms made twisted metal of the wreck but the two boilers stood for fifty-seven years among the rocks; one was finally torn up and driven ashore but the other still stands, the last remaining relic of a proud paddle-wheel steamer.

We asked about salvage and were told that the fishermen take great risks to get what they can. In 1881 a ship was wrecked that carried 701,241 pounds of cheese and nearly every home along the shore had two or three boxes of cheese in store. The boat carried frozen beef as well and it was said that one man had the walls of his barn and house hung with quarters

Right:—Wallace Light on Northumberland Strait.

of beef. A neighbour going past called out: "I see ye got some o' the wrack meat, Joe. Be it good?" Joe spat, eyed the meat and said grudgingly, "Good? Ay-ah, I das'say it'd be good all right. If ye c'd git enough of it."

But the best yarn about salvage, said Mrs. Richardson, came from the wreck of the *Bamboro* on the Half Moons in April, 1894. The steamer carried thousands of boxes of oranges and lemons. One home kept lemons in puncheons of water and had delicious pies and lemonade all summer. Children went along shore and carried home all the oranges they could pile into baskets. Even the sheep feasted on the fruit, and one fisherman said: "There was sheep around the shores in those days, hundreds of them, and man! you talk about eatin' oranges. But the lemons they didn't like. They'd get a lemon in their mouth and come down hard, then what a face! You should'a seen them screwin' their jaws around t'git rid of that lemon. It was quite a time before they would touch an orange, but after a while they got so they knew an orange from a lemon by the colour. What eatin' oranges then! Man alive, you could see nothin' but sheep eatin' oranges".

We gazed toward Seal Island and heard its story. Many wrecks were piled there and local residents would go to help those stranded. It is a rugged island less than three miles long, forty feet above sea level with scrub spruce tangles and low dunes and salt marsh. Sheep thrived there and could take shelter in the tight scrub so that wool hung thickly on most of the coverts. There were many who knew of the dangerous reefs and rocks, now named Blond Rock, Scratch All, The Devil's Limit, Hospital Rip and Mother Owen's Rock. Searchers on one occasion found twenty-one bodies of people who got ashore and then died for want of shelter. Some had perished beside wet sticks with which they had been trying to make a fire. Crows had mutilated the bodies. So two couples went to live on the island, simply to give assistance to the shipwrecked. They were Edward Crowell and his wife, and Richard Hicken who had married Mary Crowell. The latter built a cabin at East Cove and Crowell built one at West Cove. They could watch the coast and could see each other's smoke. A ship, *Vivid*, went ashore in a blinding snowstorm. It was driven high on the rocks and those on board scrambled to safety in a woods, found a path, followed it and saw Crowell's light. Crowell at once turned out with a lantern and worked until every person was in shelter.

Crowell and Hicken fished and salvaged, and then Mary Hicken wrote to Sir James Kempt,

Governor of Nova Scotia, and explained the situation. Kempt went to the island, saw the work the couples had been doing, and arranged to have a lighthouse erected. The stipend was £30 a year and Hicken and Crowell had six-month turns in tending the light. Hicken was on Seal Island for twenty-seven years and had to provide life-boats out of his salary. His sons took over, and were given seven life-preservers by the Humane Society of England. There were ninety-five wrecks during the time Hicken and Crowell were on the island but no lives were lost. The lighthouse was built of massive timbers pinned with hardwood trenails, and seal oil was the first fuel used for the light.

The earliest lighthouses of which records exist were towers built in lower Egypt which held beacon fires maintained by priests. Lesches, a Greek poet of 660 B.C. mentioned a lighthouse at Cape Incihisari, which appears to have been the first light regularly maintained for the guidance of mariners. The famous *Pharos* of Alexandria, erected before 247 B.C., took its name from the small island on which it stood, was said to be 600 feet high and was destroyed by an earthquake during the thirteenth century. Afterward many lighthouses were called pharos and the Romans erected one such tower at Dover and another at Boulogne, to guide mariners crossing the channel. During the seventeenth and eighteenth centuries lighthouses were erected all over Europe and the braziers in their towers burned either wood or coal.

The first lighthouse in Nova Scotia was erected at Louisbourg in 1734, and had a light that showed six leagues away. It was burned in 1736 but was soon rebuilt. The light in the new tower was furnished by oil fed through pipes in a copper-contained circle of wicks which held the flame. As the oil was in an open bronze basin three feet in diameter and ten inches deep, there was constant danger of fire. This was provided against by sustaining the wick-rings on pieces of cork which, if a fire took place, would burn and let the rings fall into the oil where they would be extinguished. No wood was used in the building of the tower and only the destruction of the light could have resulted.

In 1758 the Council of Nova Scotia passed an Act stating "that a Publick lighthouse of stone masonry shall, with all convenient expediency be erected on the island called and known by the name of Sambrough Outer Island at the entrance of the Harbor of Halifax and that a dwelling house for the tender or keeper of the publick light shall also be erected." The Council authorized that £1,000 from duties on spirituous liquors be used to construct the tower, and that a temporary light be provided during the period of construction. A duty of two cents a ton on vessels entering

Here in 1734 Nova Scotia's first lighthouse was erected. Louisbourg Light on Cape Breton Island.

Facing the entrance to Halifax harbour—Sambro Island lighthouse.

Halifax harbour was to pay for the light, but it was resolved that the funds be found no matter what the source when the first attempt at providing a light ended in failure. A report of the first meeting held regarding a light is in the Nova Scotia Archives and reads:

"At a Council holden at the Governor's House at Halifax, Fryday June 12th, 1752. Present — His Excellency the Governor. Benj. Green. Wm Steele. John Collier. and Geo. Fotheringham, Esqs. Resolved, That, Whereas a Lighthouse at the Entrance of the Harbour of Halifax would be greatly Beneficial to the Trade, Navigation and Fishery of the Colony, and might be the means of preserving the Lives and Properties of many of His Majesty's Subjects, and whereas altho' many persons might willingly contribute towards so good a Work without any Expectation of a Reimbursement, yet probably many may more readily be concerned therein, when attended with any hopes of promoting their own Interest at the same time. A Lottery according to the following Scheme, be set on foot for raising the sum of £450 toward building a Lighthouse at or near Cape Sambrough, (whereas, besides the advantages before mentioned), a considerable number of Settlers will be usefully employed for some Time, and a great & lasting Benefit to the Province be gained, by a voluntary Tax upon those persons (amongst others) who at present contribute nothing towards the expense of the Government whose protection & favour they enjoy.

"Scheme of a Lottery for Raising £450 towards building a Lighthouse at or near Cape Sambrough:—

The number of Tickets to be 1000 at £3 each	£3000
The number of Benefit Tickets to be 200, vizt.:	
1 prize of £500	£500
1 prize of £300	300
2 prizes of £100 each	200
5 prizes of £50 each	250
10 prizes of £30 each	300
40 prizes of £10 each	400
140 prizes of £7 each	980
1 The First Drawn	70
200 prizes	£3000

The Sambro lighthouse was completed during the summer of 1760 and much of the building material came from Boston. In 1771 it was reported that the Sambro Light was inefficient due to the use of bad oil and careless attention. So it was voted that a salary of £50 be paid the keeper in addition to the duties and he was to buy the oil. The report stated: "The Light is a stone building 62 feet high on top of a rocky island 72 feet above the water, so the light is 134 feet from the sea level, and is 12 miles from Halifax. Present duty is sixpence per ton on vessels coming into the harbour. The annual income is £184. The oil and keeper cost £142 so there is a profit of £42. The keeper measures the tonnage of the vessels."

Three years later there was more trouble and it was found that the light had failed for

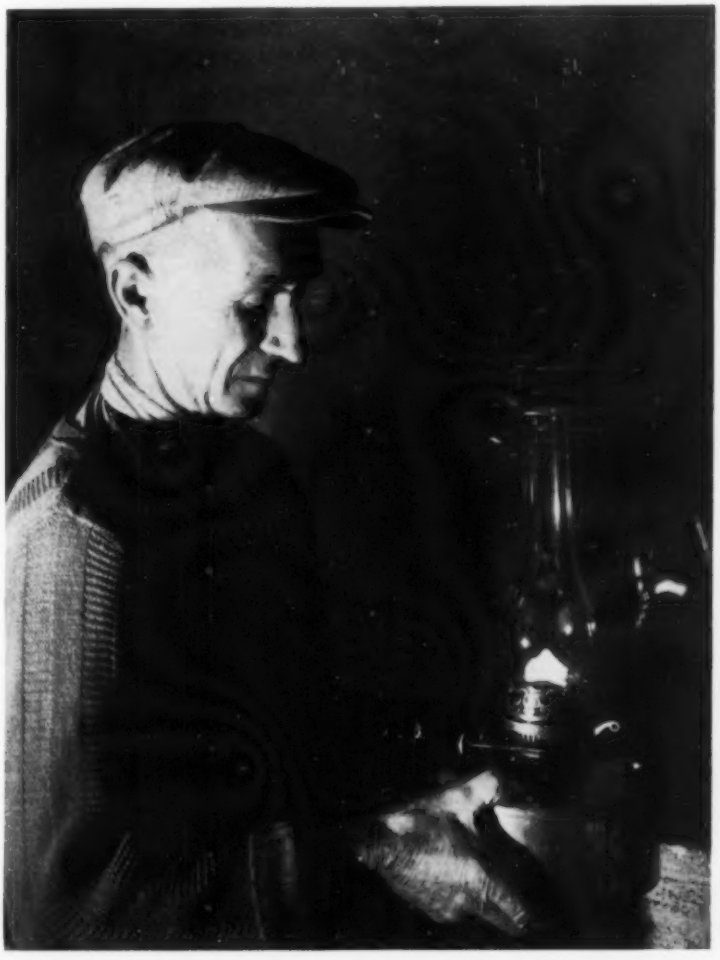
Cape Roseway Light near Shelburne—one of Nova Scotia's oldest stations.

built at the turn of the century, was converted to a lighthouse by having an erection for lanterns superimposed on the main structure in 1828. But lightning struck the building and as it hit the king post of the tower the interior was badly damaged, especially the quarters for the keeper which were just finished.

Thomas Moore sailed from Halifax in October of 1804 on a British frigate and as he passed Sambro Light was impelled to write a poem which begins:

"The murmur rose soft as I silently gazed
On the shadowy waves playful motion
From the dim distant land, till the
lighthouse fire blazed
Like a star in the midst of the ocean."

There is in the Nova Scotia Archives a touching letter from the keeper of the light at Halifax requesting the afternoon off on 24 September 1825, as he wanted to attend a show in the town that would surpass anything in his experience. He explained there would be a "Grand African Lion, a full-grown Arabian camel, a tiger and tigress, a full-grown Leopard, a wild cat, a Black Wolf, a



For twenty years this keeper has been tending his light. Malak

several nights. Inquiry was made and it was learned that the keeper owed £20 for oil and no further supplies would reach him until the bill was paid. As the man had no funds, there had been no light for five days. This was an intolerable situation and so the fellow was promptly discharged.

More light was needed for the harbour and so the Sherbrooke Tower on Mauger's Beach,

full-grown African rubber-nose Baboon, famous dancing monkeys from Borneo and Dandy Jack, a Shetland pony that did tricks."

In 1817 the Commissioners of Lighthouses, James Fraser, John Douglas and Samuel Cunard, published a notice for the information of mariners telling of fine lights at Liverpool and Shelburne and Brier Island, nearly twenty in all since the Louisbourg light. These were to serve Nova Scotia's 4,625 miles of coastline. By 1920 there were 125 lights in operation. Now there are 356 lights and fog alarms.

There is a report of the Superintendent of Lights, dated 15 December 1857, which reveals the pitiful salaries then issued to light-keepers and the dreadful conditions prevailing at some points. A typical one tells about the light at Beaver Harbour where the keeper was paid £100 salary a year and had to tend nine lamps and reflectors. At Whitehead the keeper received £60 salary and £20 for fuel. He had built an excellent wharf near the light and constructed a store for supplies but the light-house itself was entirely too small, said the report, as the man had a wife and eight children in quarters designed for man and wife. At Sand Point there was no place in which to store wood for heating and it had to be piled on the rock beside the light tower. On several occasions the entire supply had been washed away by an unusually high tide.

At Margaree Light the foundation of the tower was being eroded, the roof of the tower was leaky, and the keeper's wife had her kitchen in the cellar which often was flooded a foot in depth. The dampness caused by the flooding and the leaky roof had caused all the plaster to fall. The Northeast Light on St. Paul's Island was connected with the living quarters by a covered passage. The bell was useless in a storm or fog and so a gun was discharged every four hours. At Flint Island the keeper had no water save that caught in casks, and he could not afford a well as the cost of digging was £4 and his salary for the year was but £60. There was not a tree or shrub on the island. The Pubnico Light was in bad condition with a leaking roof and the plaster fallen, and six children crowded into two rooms. At Parrsboro the superintendent found a teen-age boy and his sister keeping the light. The lamps were in dreadful condition and the place like a pigsty. So the keeper was discharged. At Devil's Island only one room in the lighthouse had been finished and there the keeper lived and slept, did his cooking, and kept his stores. His family had to live ashore and he did not see them more than a dozen times a year. A trumpet had to be used when the fog was bad.

The report is a lengthy one and makes a reader wonder how people could endure such living conditions and such pitiful pay. The candour of the superintendent shows that he was doing his best to make those in authority increase salaries and make necessary repairs.

Most interesting is a small book issued in 1871 and containing "Instructions and Rules for the Guardians of Lighthouses together with some Medical Directions for the Use of Light-keepers in Remote Stations." At the beginning it states that lamps are to be lighted from sunset to sunrise or "in case of fog or darkness from other causes the keeper to use his discretion in lighting earlier." No circumstance whatsoever could be an excuse for failure of the light at prescribed times, and the keeper had permission to draw his salary or attend his church provided it did not interfere with his duties. Lights along Northumberland Strait and the Gut of Canso were to be extinguished 20 December and lighted again on 1st April.

There are very complete directions about the trimming of wicks and the cleaning of chimneys. These were to be cleaned every four hours, and after being lighted lanterns were to be kept clean of snow and sleet "or any moisture." Spare chimneys were to be kept ready at hand.

The Sick Room Instructions make interesting reading. Rooms in which the ill were lying were to be kept at a warmth of no more than sixty-five degrees, with screens to prevent drafts. "Sheets are to be changed more frequently than when in health." "No despondent remarks or whispering." There was to be plenty of milk and beef tea for the patient, but there were no instructions as to how the milk would be secured. The directions look after treatment of "Constipation, Piles, Diarrhoea, Indigestion, Hooping-Cough, Measles,

Peggy's Cove and its lighthouse—a favourite haunt of visiting artists.

Bronchitis, Scarlet Fever, Dropsy, Worms, Toothache, Burns, Scalds, Sprains and Poisoning." There are also instructions on how to feed and wean infants. Remedies suggested to be kept in stock include "Blue pills, castor oil, syrup of squills, tincture of iron, spirit of nitre, spirit of peppermint, Epsom salts, ginger, mustard, magnesia, gray powder, quinine, nitrate of silver, bandages, two surgical needles, mortar and pestle."

Cape Roseway light and fog alarm is one of the older stations in Nova Scotia, probably third oldest, and we visited Otis D. Orchard, the proud possessor of a Coronation Medal, who came to the station in 1930 as assistant keeper, then was keeper from 1944 until 1956. He resigned last year on account of ill-health, and lives in retirement on his small pension. He served twelve years at the Gull Rock Light before moving to the Roseway Light, so had forty-six years of service. He knows the sea and all its moods, and can tell many stories of great storms and frightening gales. He and the keeper at Gull Rock had four dories and one power-boat for fishing. These were pulled up regularly on the landing of posts and timbers leading to the shed at the rear of the tower. There came a wild night when the sea rose to terrifying height and waves twenty feet high smashed over the rest of the island. The landing was broken to matchwood and the five boats vanished in the wild water. The waves tore at the tower itself, and swept all the rocky island bare outside of the tower entrance.

"It was enough to scare anybody," remarked Otis, "but out there we got used to everything. You go out fishing and the wind kicks up and you have a very near go of it, escape drowning by the skin of your teeth. You shiver and sweat and get back to the island, but the next morning is quiet and you put out again and forget all about your scare. I suppose I was

near death more than twenty times around Gull Rock but always I would forget it, and I learned to let each day take care of itself."

We asked him about wrecks. Yes, he had seen them, always in some blinding snowstorm or gale when there was little one could do. He had watched a Lockeport fishing schooner pile up on the rocks and in a few hours there was nothing but splintered timbers, yet all the crew were saved. Then a ship from Gloucester, Massachusetts, had piled up in the same spot and again every man had reached shore. When a freighter went on the rocks in a blinding snowstorm, the weather turned bitterly cold and Otis was afraid that some of the men would be frost-bitten before they reached shelter. One chap had his feet half-frozen, but applications of cold water drove out the bite and no more than a few days of discomfort resulted.

When World War Two came along and Shelburne harbour was in great use by war vessels of all types, Otis became an Air Observer and watched for enemy aeroplanes as well as tending the light. A "fort" of sandbagged buildings was erected on the island and a detachment of soldiers was always there back of barbed wire and defences. These men were changed frequently and there were often war scares as rumours ran up and down the shore about German U-boats and other enemy craft. There was the usual talk of spies, and when a native of the island arrived with a jug of molasses he was chased and investigated as it was feared he was carrying dynamite in the jug with which he might demolish the light.

When Otis went to the island first, seven families lived there and fishing boats by the score were always around. Fish buyers came in numbers and there was so much boat traffic that the harbour was like a busy street. A school was established and a post office. Unfortunately, the landing and post office were at the other end of the oblong island and this meant that he had to go more than two miles for his mail in all kinds of weather. But transporting supplies, food, oil and coal, was hardest: during the rationing they had to pack food supplies on their backs from the landing to the lighthouse, and use oxen to haul the fuel which came in barrels. However, ten years ago, a truck was provided, and the arduous task of moving supplies became much easier.

Now the families have left, only two places are occupied, and there are few fishing boats compared with the old days. The weather, too, is milder. "We used to have drift ice move in between the island and the mainland", said Otis. "It would be a barrier we could not cross and then warmer days would come and it would go out. Then the wind would change, it would turn cold and back would come the ice."

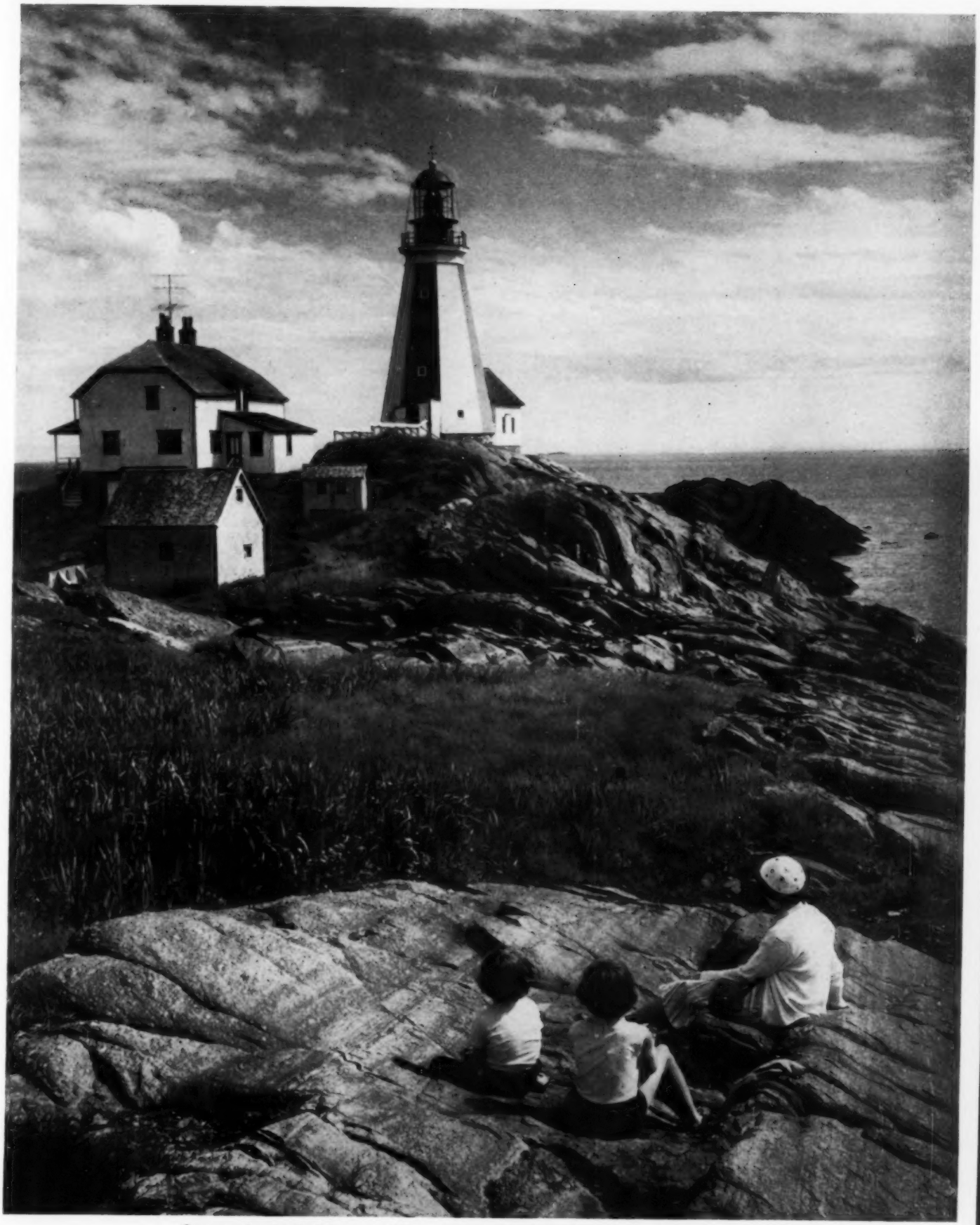
"What is there on the island ?" we asked.

"Birds of every kind," said Otis, "and squirrels and rabbits. Many does swim over from the mainland to have their fawns and they are really tame. We have humming-birds at our flowers as if we lived on shore, and pheasants came over here, brought first by the Game people. Many were hatched here and then flew to the shore but when the shooting starts we often see pheasants coming over here to get away from the gunners. The worst nuisance is the herring gulls. They are all over the place and one man tamed a pair of them. We have to watch and kick them from our path or they would go into the house with us."

"Do any birds kill themselves by flying against the light ?"

"Too many", shrugged Otis. "One night they were hitting the glass regularly and in the morning I picked up over six hundred small birds with greenish backs and yellow breasts, and there were many others about that I didn't get. Coot and ducks get killed regularly, both black ducks and eider. Once a pair of loons were killed against the light, and coot are common victims. I don't pay much heed to the varieties but I've picked up nearly everything that flies over the years I've been at the light. It's worse in the fall than any other time and then is when we get the odd birds you never see during the summer."

The skeletons of old houses are there but all that is left of the "fort" are two abandoned guns, ten-inchers. You can walk on the grass and rocks, with the herring gulls like barnyard chickens around you. A deer pokes a curious nose from a thicket and rabbits hop among driftwood like playing children. It is a quiet



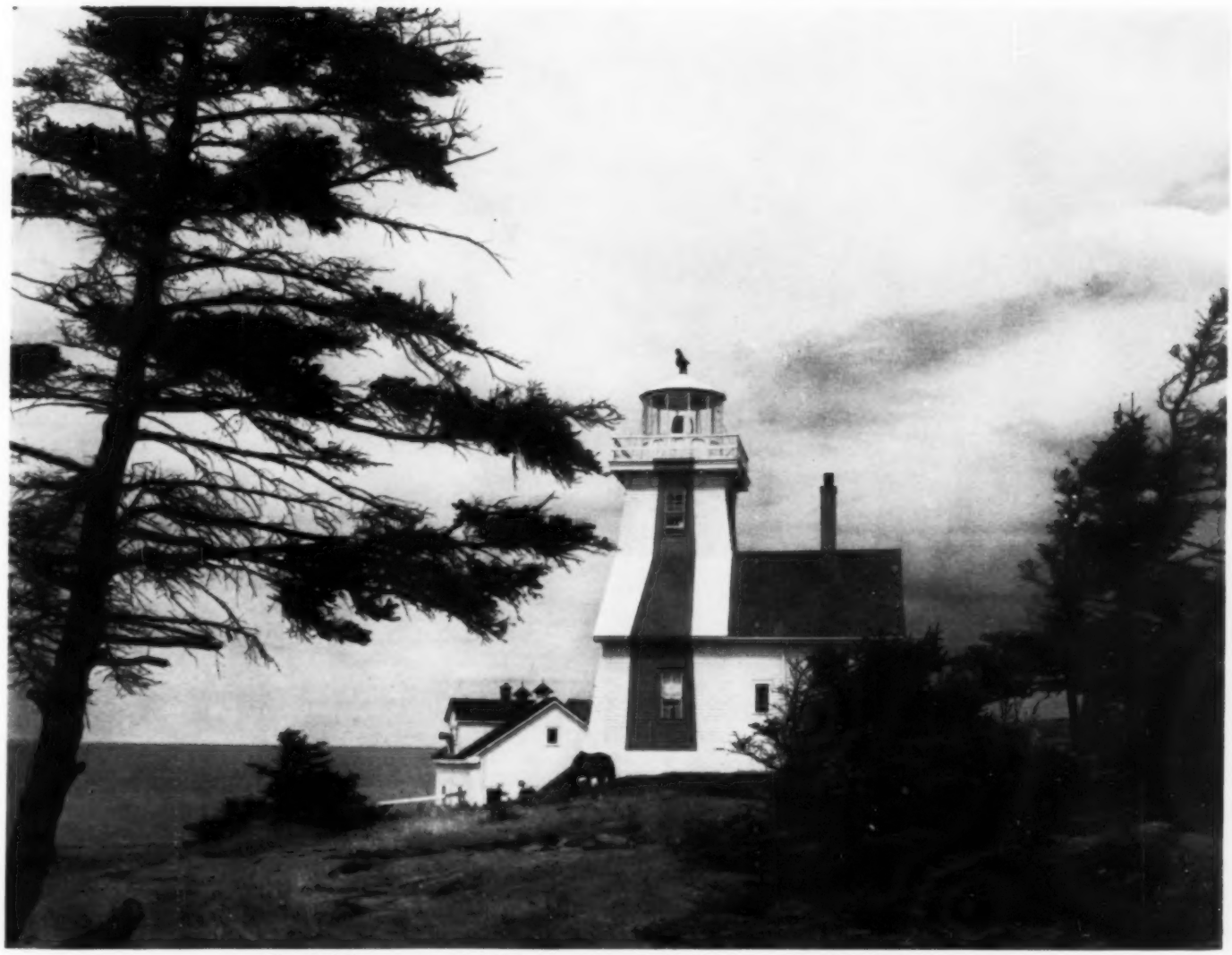
On guard—the lighthouse at Yarmouth overlooking the approach to the west coast.

spot on a mild summer day but the forgotten homes have a pathetic air.

The Richardsons often have lobsters from storm-thrown traps that are heaved up on the shore, and other keepers are as lucky. On Cariboo Island, however, the Bairds make lobster-fishing part of their work. They have been looking after the light for nearly fifty years. Charles Baird has been fishing lobster from the island for forty-four years and in 1935 his boat won the cup at the Pictou Lobster Carnival for the largest lobster catch of the season.

The whole story of Nova Scotia's lighthouses is filled with hardship and adventure. At Little Hope Light there is a sign that catches the eye as you reach the island. It reads "Too Rough. Land West Side." And there is crib-work all around the tiny holding as the one and one-half acres that made it seem a secure spot have washed away. The present tower is 120 feet above sea level; the first one was struck by lightning. Mother Carey chickens and eider ducks have struck the light hard enough to break the glass. And the terrified keeper's family watched a great storm break over the island some years ago and sweep away the building holding all their supplies. The angry tempest tore at the tower itself until it trembled. It survived the storm, but the wind held and the waves were so tremendous that it was twenty-one days before the wife and children

On a shelf above the beach stands the lighthouse on George Island in Halifax harbour.



The lighthouse at Point Prim, north-east of Digby across Digby Gut.

could be taken to the mainland and fuel landed for the light.

We drove to Pubnico and walked along a causeway to the lighthouse that was almost washed away by Hurricane Edna. It is a wooden building and in a spot almost sheltered, yet the sea came in over the causeway until it was six feet under water and the deluge poured up the lighthouse stairs while wind rocked the structure. The keeper and his family managed to reach shore, and the family has not returned to live in the tower. But the lights glow every night, for this modern age has wonderful inventions and many beacons are electric and controlled from land. Drive along the South Shore at night and you will see the lights come on like magic and think it but a part of the evening. But stop over, hire a fisherman to take you the few miles offshore to a light, land and scan the situation, talk with the keeper who has the memory of harsh storms forever in his thinking, making his speech slower, his smile more kindly. He and his wife are among the most hospitable folk you can meet, and during your visit you will sense that their service to others is something that places them on a plane above us ordinary folk.

Photographs by N.S. Film Bureau and Bureau of Information except where credited.

Seymour Narrows, British Columbia, under conditions of flood-tide over Ripple Rock. Maud Island is visible in the lower right foreground. The present navigation channel lies just to the left of Maud Island and extends roughly half-way across the white water.

The Story of Ripple Rock

by JEAN P. CARRIÈRE

Department of Public Works photographs.

WHEN the glaciers moved along the west coast of Canada, they eroded the softer parts of the rough crust of the earth and left a rugged coast line which is singularly beautiful. A myriad of waterways protected from the rollers of the Pacific Ocean by picturesque islands were formed where sea and mountain meet. The islands, in reality a chain of submerged mountains, vary in size from that of Vancouver Island with an area of 14,000 square miles down to tiny ones such as minute Egg Island in Queen Charlotte Sound. The coast is also laced with innumerable inlets and channels which add to the rugged beauty of British Columbia's westward outlook. A series of deep, protected navigable channels, known generally as the "inside passage", and extending from north to south along the coast, widen in places to several miles and narrow in others down to a few hundred feet.

There are only three places where boats are exposed to the force of the Pacific in sailing this inside passage: across Queen Charlotte Sound at the north end of Vancouver Island, at Milbanke Sound between Campbell and Price Islands, and at Dixon Entrance north of Prince Rupert. In all cases the exposure occurs only for a few miles.

From the head of the Strait of Georgia, most coastal steamers follow Discovery Passage between Vancouver Island and the mainland of British Columbia. This passage leads from Campbell River northward to Johnstone Strait.

Between these two straits lies a maze of is-

The charts accompanying this article were compiled from regular navigation charts published by the Hydrographic Service of the Canadian Government.

lands forming a labyrinth of passages such as Seymour Narrows, Hole in the Wall, Surge Narrows and Yuculta Rapids, all used to various extent for navigation, and through which tides flow and ebb twice daily with a rush of water. All these passages have rather sinister reputations, but the most publicized by far is Seymour Narrows where we find Ripple Rock.

In 1774, Juan Perez, a Spaniard, saw parts of the west coast of North America, but did not land; it was only many years later that an account of his voyage was given to the world.

The contemporary story of British Columbia may be said to begin with the arrival of Captain James Cook in March 1778, when, while seeking the north-west passage, he discovered Nootka Sound. He stayed there about a month repairing his ships and learned of its wealth in furs, especially the fur of the sea otter. As a result, trading vessels began to frequent the coast in 1785, and in 1788 John Meares, one of the adventurous traders, settled and built the first vessel constructed on the western coast of Canada.

At that time, Spain claimed the region, and to enforce her rights, seized John Meares' vessels in 1789 for illegal trading. Meares applied to Great Britain for redress. Spain restored the vessels, but the dispute waxed warm and both countries prepared for war. The trouble was settled by the Nootka Convention of 1790 by which Spain abandoned her claim to the exclusive commerce, fishery and navigation of the Pacific, and agreed to restore the land taken from Meares and to indemnify him for the loss sustained.

To carry out the terms of the Convention and to search for a passage to the Atlantic, an expedition under Captain George Vancouver was sent out from England in 1791. He and the Spanish representative, Quadra, failed to agree upon the territory to be restored, but during 1792-3 and 1794, Captain Vancouver carefully examined and charted the coast. From 1789 to 1795, a Spanish colony existed at Nootka, but it was abandoned in March 1795 in pursuance of the Convention.

The first recorded description of Seymour Narrows and Ripple Rock is that written by Captain Vancouver, who is believed to have been the first white man to chart this reef. In 1792 he sailed his ship, the *Discovery*, through Seymour Narrows, which he then named Yuculta Narrows. One marvels that such a feat could be accomplished with a sailing ship.

Captain Vancouver's log indicates that he went up the narrows on the west side of Ripple Rock, instead of the much safer east side used today by ships. He also seems to have been just as worried about the hostile Yuculta Indians lining the shores as he was about Ripple Rock.

Seymour Narrows is about two miles long and has an average width of 2,500 feet. Twice a day, the tides of the Pacific rush in and out. These tides cause currents to race through with velocities exceeding ten and up to fifteen knots, 250 days of the year.

At the southern end of Seymour Narrows, nearly in the centre of the channel, there exists a submarine outcrop of rock in the shape of a hog's back surmounted by two pinnacles or humps reaching to nine and twenty feet below low water. This outcrop, which is really part of an underwater mountain, is known as Ripple

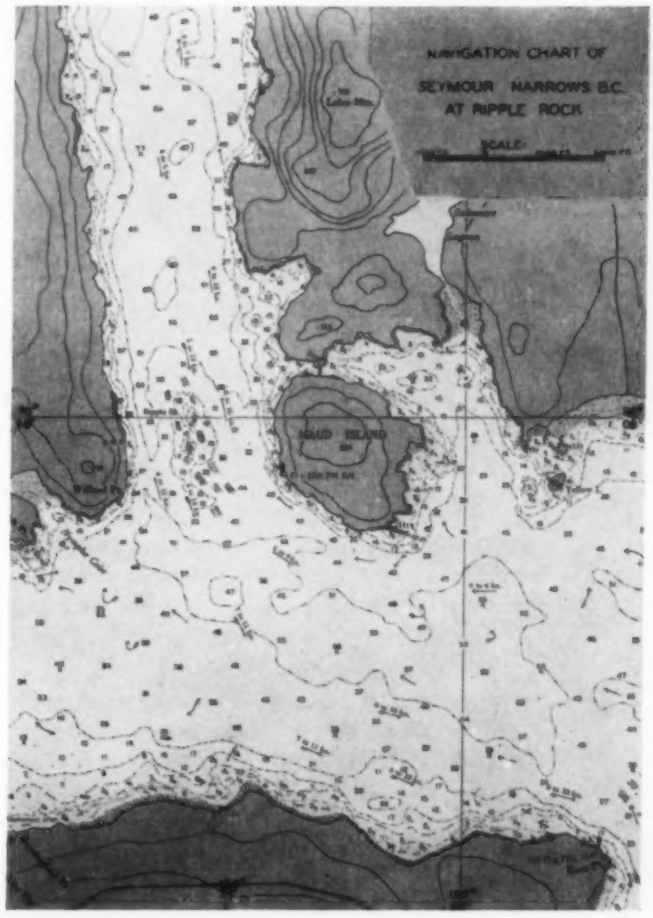


Chart of Seymour Narrows showing Maud Island and Ripple Rock.

Rock. On the east side of the Rock, the channel is 325 feet deep and on the west side 400 feet deep. This massive obstruction in the path of the charging tides causes great turbulence, and whirlpools are so large and powerful that they have upset small craft and diverted large and powerful ships from their courses.

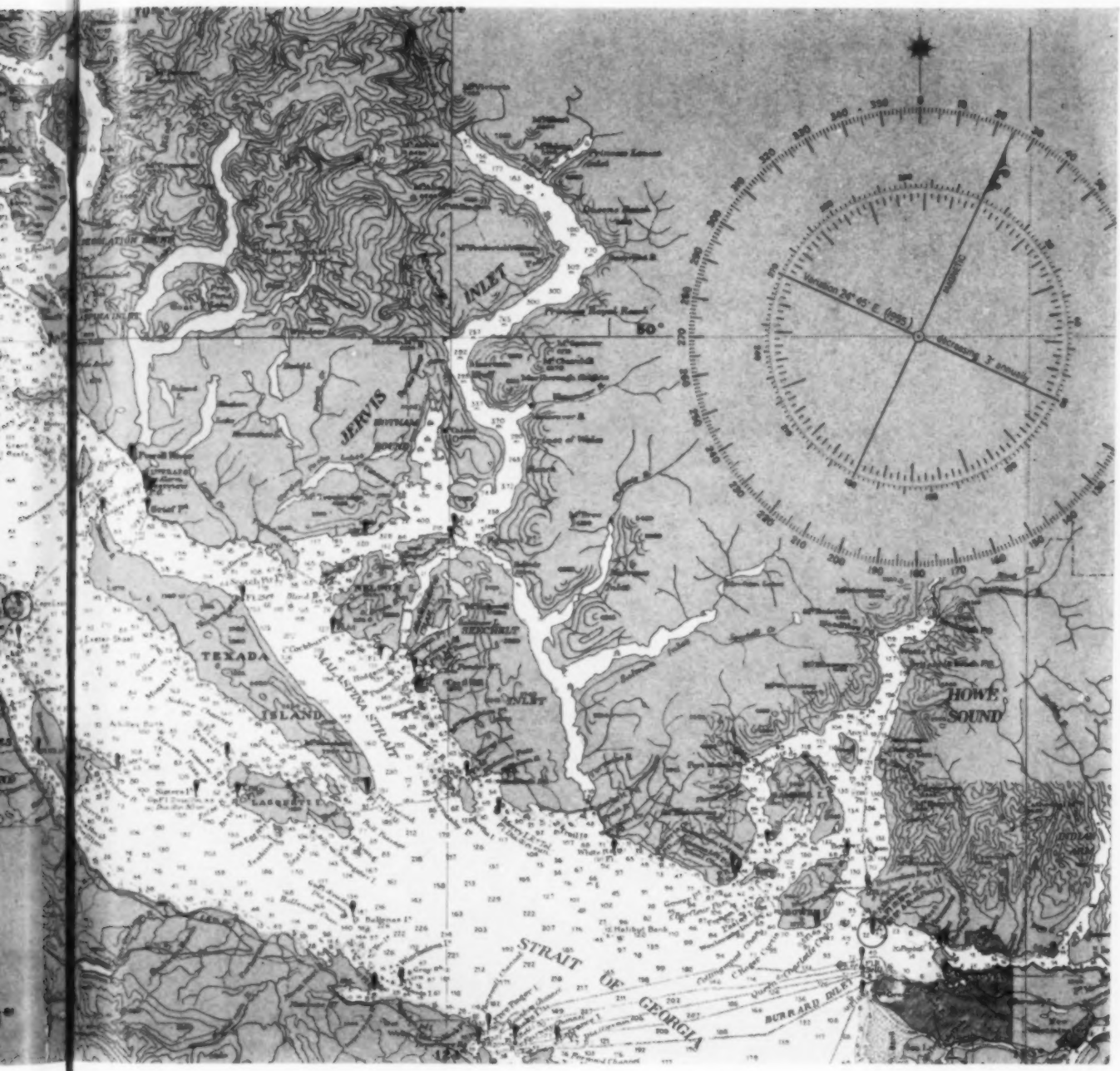
According to legend, centuries ago the north pinnacle of Ripple Rock was much closer to the surface than it is now; Indian braves would show off by standing on it at low tide with the water up to their waists and the rock vibrated so much under the daredevils' feet that their cheeks shook. Part of the legend recounts that unfaithful wives were forced to stand on the rock at low tide and left to be carried away by the rising tide.

No complete record of losses has been compiled, but it is known that since 1875 some twenty-four large ships and barges have been lost or severely damaged, and well over 100 smaller vessels, fishing boats, tugs, yachts, and so on, have been sunk with the loss of at least 114 lives. (See Table I.)

TABLE I—List of known casualties on or in the vicinity of Ripple Rock.

Year	*Name of Ship*	*Remarks*
1875	(U.S.A.) S.S. Saranac	Total loss
1875	(U.S.A.) S. S. Washusett	Total loss
1884	R.N. Vessel Satellite	Total loss
1902	Bonita	Serious damage
1904	Danube	Stranded on Rock
1904	Burnside (U.S. cableship)	Serious damage
1906	Themis	Stranded on Rock
1911	Spokane	Total loss
1914	Gerard C. Tobey (barge)	Total loss
1916	Henry Villard (barge)	Partial loss
1916	Princess Maquenna	Stranded on Rock
1918	Palmyra (barge)	Partial loss
Date uncertain	Queen	Struck Rock
1919	Princess Ena	Stranded on Rock
1920	Prince George	Stranded on Rock
1927	Prince Rupert	Stranded on Rock
1929	Aleutian	Stranded on Rock
1929	Princess Mary	Grazed Rock
1930	Koprino	Broke rudder on Rock
1931	Camosun	Damage to propeller
1934	V.T. No. 2	Collision with scow
1936	Prince Rupert and Anna J.	Collision
1941	S.O.C. No. 95	Stranded on Rock
1946	Survey Ship Jas. S. Stewart	Serious damage

Requests for the removal of the objectionable top parts of Ripple Rock may have been expressed for a very long time but the first recorded official application originated in the office of the Chief of Engineers, U.S. Army, Washington, on January 9th 1905, and consisted of a letter addressed to Hon. Wm. H. Taft,



Secretary of War, from which the following has been extracted:

"The United States Cable Ship *Burnside* recently ran on to this rock while on her way to Alaska to repair cables and was very seriously damaged and nearly lost. This rock is in Canadian territory and it has been suggested that some understanding might be reached with the Canadian Government looking to its removal in the interest of shipping and I have the honour to recommend that the Secretary of State be requested to bring the fact of the existence of this obstruction to the attention of the Dominion Government with a view to such action as the Government may see fit to take."

On the 11th of January, the Secretary of War transmitted the request to the Secretary of State, who in turn sent it to the British Ambassador in Washington, Sir H. M. Durand.

On the 17th of January of the same year, the

Above:—Chart of the Strait of Georgia from Vancouver north-westward to Discovery Passage and including Seymour Narrows.

Ambassador transmitted it from the British Embassy in Washington to Lord Grey, then Governor-General of Canada, at Ottawa.

The immediate outcome of these representations has not come to light in open records and the next recorded activity starts in 1921. Since that year the question of removing the peaks of Ripple Rock as a hazard to navigation has been kept very much alive.

A very strong deterrent to these requests up to about 1942 was a continuing bitter argument between the two major cities of British Columbia, Vancouver and Victoria.

Vancouver shipowners have for generations been the principal sponsors of the project of removal of the obstruction, while Victoria industrialists of the same generation have fought equally hard for its preservation on the grounds that it is the only natural feature in the Strait of Georgia which could serve as the foundation for a pier to support a railway bridge, by which a direct connection might be obtained with the mainland. The argument reached a climax when a threat was made in Victoria of a movement for provincial secession from Canada if an attempt was made to remove Ripple Rock.

In 1931, a commission of the "Department of Marine" under the chairmanship of L. E. Côté held hearings in Vancouver and Victoria "to enquire into the feasibility of removing Ripple Rock".

All evidence heard in Vancouver was in favour of removing Ripple Rock, while that heard in Victoria was divergent and conflicting, the shipping interests, masters and pilots, pressing for removal and others, including a committee appointed at a public meeting in Victoria, pressing for retention of the rock. The city councils of Victoria and Nanaimo remained neutral throughout the hearings.

All mariners were extremely strong in their condemnation of any attempt to put a pier on Ripple Rock, stating that the danger to navigation would thereby be greatly enhanced.

The Commission recommended removal of Ripple Rock using the following statistics (1931) as economic factors justifying the undertaking:

Passages by large passenger, freight and tramp vessels	1,500 to 2,000 per year
Passages by other vessels	4,500 to 5,000 per year
Value of vessels	$25,000,000.
Number of passengers carried	175,000 per year plus crews
Cargo tonnage	In excess of 150,000 tons per year
Value of cargoes	$107,000,000. per year.

When this recommendation became public knowledge suggestions for methods of removal started to pour into Government offices; they were submitted equally from mariners and landlubbers, citizens and foreigners, men and women, engineers, scientists, soldiers, labourers, miners and day-dreamers. They ranged all the way from proposals for plastering the pinnacles with mortar shells, navy torpedoes and blockbusters, tunnelling from shore and attacking the rock from inside and later on, vaporizing them with an atomic bomb.

During the Second World War (in 1941) the United States, worried about the safety of ammunition ships bound for Alaska and the Aleutians, demanded the removal of the submarine threat of Ripple Rock. The War Committee of the Canadian Cabinet decided that this was necessary to meet naval requirements and directed the Department of Public Works to proceed with the work, funds being provided from the war vote.

Between 1921 and 1941, various investigations and studies had been carried out in the interests of navigation through Seymour Narrows, which included accurate charting of Ripple Rock and studies of the hydraulic characteristics of the passage under various conditions.

Preliminary studies of numerous likely methods for removing the top of the Rock were also made and some conclusions, reached in 1928, held firm throughout the investigations; they may be summarized as follows:

(a) Bulldozing or placing large explosive charges on the surface of the rock	Impracticable
(b) Underground method — tunnelling	Too expensive
(c) Drilling and blasting from a structure built on the rock	Risk of loss of human life too great
(d) Drilling and blasting from suspended platform	Impracticable
(e) Drilling and blasting from floating plant	Inexpensive and promising success

Vertical aerial photograph of Seymour Narrows. The upper part of the photograph shows Quadra and Maud Islands and the lower part Vancouver Island. Maud Island is in the centre of the photograph and appears as a small peninsula because of the causeway which connects it to Quadra Island.

It is interesting to note that the estimated cost, in 1928, to remove the rock to a clear depth of twenty-seven feet below low water line was $167,500.

In 1942, public tenders were invited to remove the rock to a depth of 30 feet below low water but no one bid for the contract; however, offers were made by two firms to carry out the work on a cost plus basis.

After negotiations, the Government entered into a contract with the British Columbia Bridge and Dredging Company in 1942.

The study of a suitable barge and anchors was made on a hydraulic model of the Narrows at the University of Washington, and after many disasters on this small and economical scale, designs were developed along lines that seemed most likely to succeed and full-scale

Seymour Narrows at flood-tide. This photograph was taken in 1945 and shows the drill scow anchored over Ripple Rock by means of overhead steel cables stretched between Maud Island and Vancouver Island. Maud Island is in the background and the causeway connecting Maud Island to Quadra Island is visible on the left.

implementation was put under way. This involved the construction of a specially equipped drill barge 150 feet long, and six concrete anchors, two weighing 250 tons each, and four, 150 tons each. On heavy steel cables attached to these anchors, the barge was to be moved in all desired directions.

The equipment was fully assembled and moved to the site of operations in the summer of 1943. Right from the start, it became evident that the anchorage system would have to be redesigned, as the vibrations set up in the steel anchoring cables and transferred to the barge precluded continuous drilling and blasting. These vibrations also set up stresses in the anchoring cables, which could not be sustained for long periods. This caused the cables to snap frequently.

Attempts were made to anchor the cables to heavy bolts set in the rock on the shores to keep them out of the water, the element which was judged to cause most of the vibration; all proved of no avail. During all of the attempts made in 1943, the steel anchoring cables snapped on an average of one every forty-eight hours, and very little progress was made in drilling and blasting. The work was suspended in the fall of 1943, and further studies were made to solve the problem of anchorage.

These studies resulted in a proposal to suspend cables across the narrows with a minimum clearance of 135 feet above high water, this clearance being required to allow the passage of ships during the drilling and blasting operations. Side anchor lines, running from the drill barge deck to the overhead cables, were to complete the anchorage system.

This project did not receive immediate approval, and it was only in the late fall of 1944 that the Government allotted sufficient funds to start its implementation.

By summer of 1945, two steel cables, one and three-quarter inches in diameter, three thousand five hundred feet long and weighing ten tons each, had been strung across the narrows and were supported above the water by Douglas fir

masts 100 feet high; the barge was attached to these as planned, and drilling and blasting operations were attempted once again.

During the summer, 120 holes were drilled and blasted against the estimated minimum of 1,500 required to complete the operation. At this rate, it would have taken twelve and one-half years to complete the project, and based on performance since 1942, the cost might have reached many millions of dollars. In January 1946, the Cabinet agreed that further operations were not justified, and terminated the contract.

This did not reduce the pressure on the Government for the removal of this impediment to safe navigation, and in 1953 the National Research Council was instructed by the Chairman of the Privy Council Committee of Scientific and Industrial Research to make a new study of the feasibility of removing the hazard of Ripple Rock and to make suitable recommendations. As part of this study, a diamond drill hole was bored with great difficulty a distance of 2,500 feet, from Maud Island on the east side of the Narrows, curving down under the east channel to a point beneath Ripple Rock. The core was recovered to make a geological study of the rock encountered.

The channel between Maud Island and the Rock being 325 feet deep, the drill bit had to be directed downward to pass beneath the deep part of the channel with a satisfactory clearance, and then be re-directed upward in a long curve to reach into Ripple Rock.

After considerable study of the drilling operations and of the recovered rock core, it was concluded that the rock was mostly basalt with some andesite and a few bands of volcanic breccia; there was some faulting but no evidence of water intrusion through the fault zones. Tunnelling in this rock presented nothing but an ordinary mining problem. It appeared to be entirely feasible, one that could be carried out at reasonable cost.

The Committee of the National Research Council charged with this study examined all proposals and likely methods of attack. It reported that the objectionable twin peaks of Ripple Rock could be removed, and favoured an underground approach to the inside of the rock and the setting off of one massive blast to dislodge, break up and dispose of them. The Department of Public Works was charged with the responsibility of carrying out the recommendations of the report.

For the preparation of detailed plans and specifications, the Department employed Dr. Victor Dolmage, Consulting Geologist, and

Aerial view of Seymour Narrows looking westward. Maud Island is at bottom left, Quadra Island at bottom right, and Vancouver Island in the background. The camp site for the tunnelling operation is on Quadra Island and is connected by road over the causeway to the main shaft on Maud Island. The bay inside the causeway, lower centre, serves as a harbour and seaplane base during the operations.

First excavation work. The exact position of the main shaft has been established and miners are commencing its excavation.

E. Mason, Consulting Mining Engineer, to work under the direction of the Chief Engineer, Harbours and Rivers Branch.

The final designs for the project provide for:

(a) A shaft on Maud Island to be sunk to a depth of 500 to 580 feet, 7 feet by 18 feet in cross-section, and to contain three compartments, one for mucking, one for service and a manway. It also must provide space for ventilation and other service conduits and power lines.

(b) A tunnel, 2,370 feet long and 6 feet by 7 feet in cross-section, leading from the main shaft, under the east channel at a minimum depth of 100 feet under its lowest point, to a position under Ripple Rock.

(c) Two main access raises leading upward from the end of the tunnel toward the two pinnacles of Ripple Rock, for a height of approximately 300 feet; these raises, 15 feet by 7 feet in cross-section, to contain three compartments similar to those in the main shaft.

(d) Sub-levels, in the form of tunnels, 6 feet by 7 feet in cross-section, to be driven off each raise under each of the pinnacles, lengthwise, for a length of 370 feet, more or less.

(e) Small tunnels called boxhole entries, roughly 6 feet by 6 feet on a 45-degree slope, and coyote drifts on various grades to be driven from the sub-levels to various directions and levels under each pinnacle, to serve as chambers into which the explosives for the final blast will be placed.

A contract was awarded in the fall of 1955, and work was put under way before the start of the winter.

Safety precautions are amongst the highlights of the project. All tunnelling is preceded by diamond drilling, with all cores being carefully recovered. Test hole drilling and grouting is carried out whenever required.

Careful timbering and concreting of the work is being done and provision has been made for flood control gates and emergency doors. Forced ventilation is maintained at all times and explosives for the final blast will be encased in water-tight and vapour-proof metal containers.

The final blast, tentatively scheduled for early 1958 and involving the use of about 750 tons of high explosives, will be the most spectacular part of the project. It will be preceded by detailed safety precautions extending many miles away from Ripple Rock. Special instructions will be issued to all persons within a specified area, explaining the precautionary measures to be taken. The exact timing of the blast will be scheduled and forecast sufficiently in advance for all concerned to follow the recommended safety measures in good time.

A complete photographic record of existing

installations will be built up before the blast to compare with photographs taken afterwards. Seismic recording apparatus will be installed to record the extent and magnitude of the earth tremor, while other equipment will measure the blast effect.

The blast will also be scheduled so as to reduce to the minimum any detrimental effect it may have on fish, as some of British Columbia's famed salmon runs proceed through Seymour Narrows.

At the present time the shaft has been completed and the main tunnel has been excavated for a distance of 1,700 feet. No unforeseen difficulties have been encountered and the rock excavated agrees with the conclusions reached as a result of preliminary drilling.

It is logical to assume that in a few months from now, God willing, a historical but notorious landmark will have disappeared, leaving in its wake sorrows, disappointments and heartbreaks for many and a sense of achievement for a very few.

Shaft excavation work about fifty feet below the surface. The headframe has not yet been set up completely and transportation of excavated materials is still being done by emergency method.

Completed headframe structure over the shaft. The shaft excavation has been completed and the elevator cage and machinery are in operation. The other buildings are workshops and storerooms.

The most recently erected memorial to David Thompson, a cairn beside the Columbia River near Castlegar, British Columbia. It was unveiled in 1954.

Canada Remembers David Thompson

by MABEL E. JORDON

Photographs by the author.

ONE OF THE great names in connection with the early history of Western Canada is that of David Thompson. Born in 1770 in London, England, Thompson came to America at the age of fourteen, joined the Hudson's Bay Company, and for many years served it as explorer and surveyor. He died in 1857. The extent and accuracy of his surveys, his map of the Canadian North-west made in 1814, and his well-known Journal have given him a secure place as Canada's great geographer. The present year marks the centenary of his death and also the 150th anniversary of his first successful crossing of the "great sea of mountains", as he called the Rockies.

Plaque on the Kootanae House cairn, about one and one-half miles north-west of the memorial fort.

The David Thompson Memorial Fort at Lake Windermere in the East Kootenay district, a replica of Kootanae House. On the left is one of the blockhouses.

The purpose here is not to sketch David Thompson's life but rather to record some of the ways in which his accomplishments have now been recognized. First was the publication of his own narrative, edited by Dr. J. B. Tyrrell and published by the Champlain Society in 1916. The manuscript had been written by Thompson when he was over seventy years of age. After his death one of his sons sold it to Mr. Charles Lindsey of Toronto, who later sold it to Dr. Tyrrell. While with the Geological Survey of Canada, Dr. Tyrrell had travelled and surveyed much of the same territory as had been traversed by Thompson some seventy-five years earlier. Thus he could well appreciate the tremendous work done by Thompson. Dr. Tyrrell had intended re-writing the *Narrative* in a more popular style; but when the Champlain Society learned of the existence of the manuscript, an offer was made to publish it in its original form. A limited edition of 550 numbered copies was printed, the title being *David Thompson's Narrative of His Explorations in Western America, 1784-1812.* (After 1812 he was employed by the International Boundary Commission for ten years, surveying the boundary line between Canada and the United States from St. Regis, Quebec, to Lake of the Woods, Ontario.)

The first structural memorial to him was built at Lake Windermere in the East Kootenay district of British Columbia. Known as the David Thompson Memorial Fort, it is considered to be a replica of Thompson's Kootanae* House, which he built in 1807 and which was the first trading post on the Columbia River or its tributaries. The Canadian Pacific Railway and the Hudson's Bay Company each had a part in the project, which was complete with two blockhouses and pickets. A gala opening celebration was held in August 1922, with the enactment of Thompson's landing with his voyageurs, an Indian pageant, and various other activities. The fort was intended to serve as a museum and tourist attraction but succeeded as neither. Instead, it was used suc-

*This spelling of the word (Kootanae) was used by Thompson throughout his *Narrative*. Yet the plaque on the site of the original post, erected by The Historic Sites and Monuments Board of Canada spells it Kootenae. This might be an oversight or else a compromise with Kootenay, as it is spelled today.

THESE REMAINS ARE PRE-
SERVED AS A RARE EXAMPLE OF
THE PRIMITIVE CHIMNEYS BUILT
BY THE FUR-TRADERS IN THEIR
FORTS LONG BEFORE THIS REGION
HAD A SETTLED POPULATION

Above:—
These chimneys, restored by the Historic Sites and Monuments Board of Canada, are all that remains of old Rocky Mountain House in Alberta. They stand a few miles west of the community of Rocky Mountain House.

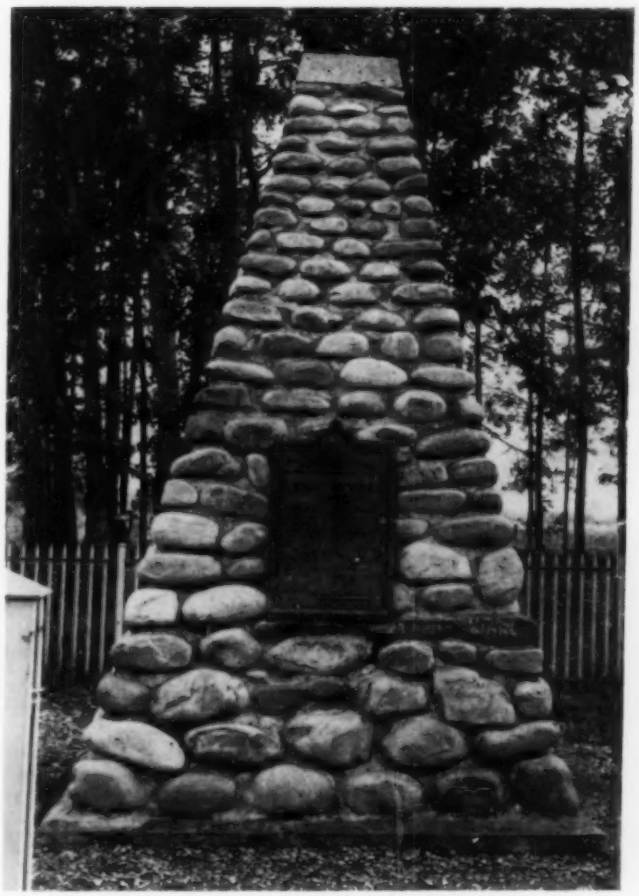
The bronze plaque on one of the restored chimneys of Rocky Mountain House, shown above. A stone cairn (opposite page) stands nearby. Rocky Mountain House was built in 1799 by the North West Company.

cessfully as a civic centre by the district until a new one was built at Invermere ten years ago. Since then the fort has fallen into disuse and become badly neglected — a rather distressing situation.

On the actual site of the original Kootanae House, about a mile and a half to the northwest of the memorial fort, a cut-stone monument with a bronze plaque was erected by the Historic Sites and Monuments Board of Canada in 1938 to commemorate Thompson's arrival and his explorations during the years 1807-11 on the Columbia and in adjacent territory. The fenced park-like area on which it stands was donated by a local resident.

Two other cairns on the Columbia River in Canada commemorate historic dates and places related to Thompson's explorations. One, at Boat Encampment on the great bend of the river, was unveiled in 1953. It was there that Thompson wintered after traversing the Athabasca Pass in 1811, the first white man known to have done so. The place subsequently became a rendezvous for fur brigades for a half-century. The other, more recent, cairn is on the bank of the river near Castlegar. It was erected in 1954 and unveiled by Dr. W. N. Sage, the British Columbia representative of the Historic Sites and Monuments Board. Thompson passed this spot on 5th September 1811, while completing the last section of his survey of the great river from Kettle Falls to Big Bend by way of the Arrow Lakes.

Alberta has two monuments in recognition of Thompson's public services. At Rocky Mountain House all that remains of the old post are two stone chimneys. These were restored by the Historic Sites and Monuments Board in 1931 and, with a natural stone cairn, are enclosed in donated park land. Rocky Mountain House was originally built in 1799 by the North West Company. Thompson wintered there in 1800-1, 1801-2 and 1806-7. From there in 1807 he set out on his successful journey across the Rocky Mountains to discover the headwaters of the Columbia. Another cairn is at Old Fort Point in Jasper National Park near the Athabasca River. The plaque records his discovery of the Athabasca Pass to the Columbia and the fact that it immediately became a regular trade route across the mountains, remaining so until the advent of the railway.



The natural stone cairn, erected in 1931, at Rocky Mountain House.

Thompson was buried in Mount Royal Cemetery at Montreal. His grave went unmarked and almost unnoticed until 1926, when the Canadian Historical Association honoured his memory by having a fine stone column placed there. On it are chiselled these words:

"David Thompson
1770 1857
To the memory of the greatest of Canadian geographers who for 34 years explored and mapped the main travel routes between the St. Lawrence and the Pacific."

Eighteenth Congress of the International Geographical Union

by J. LEWIS ROBINSON

EVERY four years geographers from all over the world assemble together to discuss mutual problems and to present research and philosophy to their colleagues. Since World War II congresses have been held in Lisbon, Portugal, and Washington, D.C., and in August, 1956, the congress convened in Rio de Janeiro, Brazil.

Membership in the International Geographical Union is by National Committees. In each of the forty-eight countries adhering to the Union groups of geographers organize themselves into a National Executive which is sponsored by some reputable scientific organization in the country. The National Committee, directed by a Chairman and Secretary, continues the work of the local I.G.U. in each respective country during the period between congresses. As will be noted later, the geographical work of the National Committees is wide and varied, and often operates through commissions which are organized to perform specific functions.

Prior to World War II Canada's membership in the International Geographical Union was made possible through the interest, energy and financial assistance of the late Lieutenant-Colonel G. L. P. Grant-Suttie, who was the

At top:—The congress was held in Rio de Janeiro, capital of Brazil. View of the city's waterfront and beautiful harbour. Brazilian Embassy, Ottawa

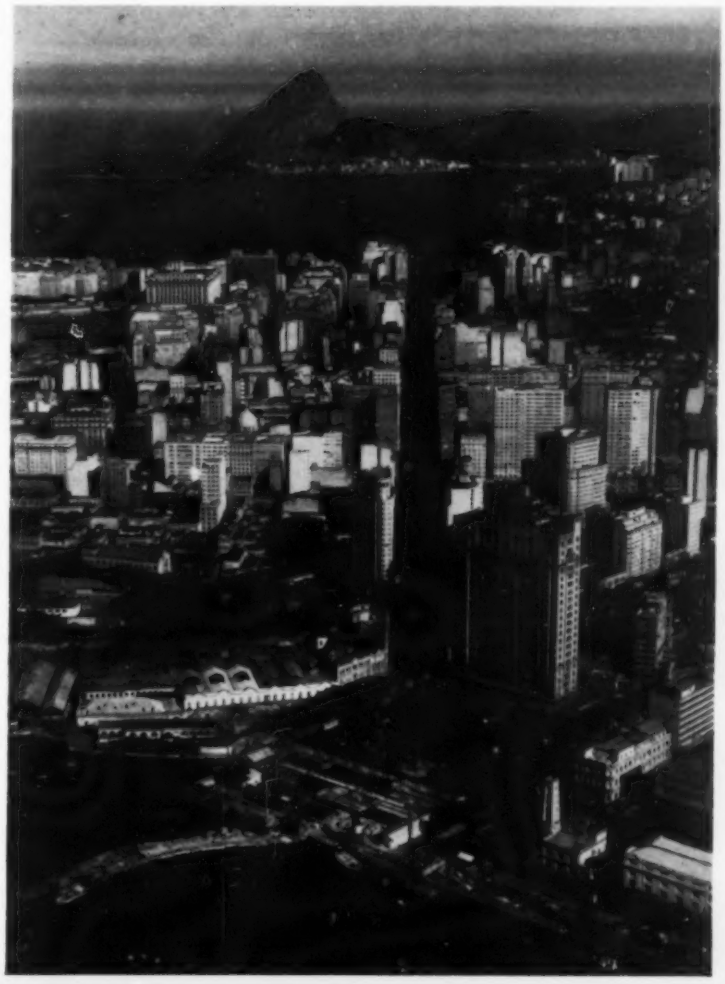
first Chairman of the Canadian Committee. The sponsoring organization was the Canadian Geographical Society. Since there were in Canada before 1940 few professional geographers, as we now know them, membership in the Canadian Committee consisted, in general, of government employees, some of whom were interested in mapping, and university professors in geology or the social sciences who had some knowledge of geographical principles. One of the main functions of the Committee was to inform its members of developments in geography in other countries, and Colonel Grant-Suttie is given credit to some degree for the establishment of the first full Department of Geography in Canada at the University of Toronto in 1936.

After the war the I.G.U. was to meet in Portugal in 1948, but the meeting was postponed for a year when arrangements could not be completed. The Canadian Committee was represented at the Lisbon meeting by four delegates led by Professor B. Brouillette, University of Montreal, Dr. F. J. Alcock, who was at that time Acting Chief of the newly formed Geographical Bureau, Professor George Kimble, McGill University, and Major I. Bowen, Department of National Defence. At the meeting Professor Kimble was elected secretary of the world organization of geographers, to assist the new president, Dr. George Cressey, from the United States.

After Colonel Grant-Suttie's death in 1949, chairmanship of the Canadian Committee was taken over for a short time by the late Dr. Harold A. Innis. The Geographical Branch in Ottawa, led by Dr. Wreford Watson, took a more active interest in the work of the I.G.U. and organized a notable display of Canadian geographical material for the seventeenth congress, held in Washington, D.C. in 1952. Seven delegates, led by Professor Donald F. Putnam, University of Toronto, represented Canada. At that meeting it was apparent to the Canadian delegates that the Canadian Committee needed a complete reorganization, in light of the increased importance of professional geography in Canada, if it were to play an effective part in the world organization.

As a result, a new constitution was drawn up. New members of the Canadian Committee were appointed and they included representation from each university Department of Geography in Canada, and federal government members who were concerned with geographical work. The new Chairman was Dr. Benoit Brouillette, Faculty of Commerce, University of Montreal, and the secretariat was placed in the federal Geographical Branch, with Dr. Norman Nicholson as secretary of the Committee. The sponsoring scientific body was the Canadian Association of Geographers. The Committee now meets annually at the same time and place as the meeting of the Canadian Association of Geographers.

The Canadian Government recognized the importance of strong Canadian representation at the international meeting by giving a grant through the National Research Council to the Canadian Committee. An excellent display of Canadian geographical materials and publications was prepared by the government Geographical Branch. Membership of the Canadian delegation was widespread across Canada, and each of the Canadian universities sending



Part of the business section of Rio de Janeiro.
Brazilian Government Trade Bureau

delegates also gave financial assistance for travel expenses. The delegation consisted of Dr. Brouillette, chairman, Dr. Nicholson, secretary, Dr. J. Lewis Robinson, University of British Columbia, representative of the Canadian Association of Geographers and the Canadian Geographical Society, Dr. Pierre Dagenais (University of Montreal) from the Quebec government, and university representatives as follows: Dr. L. Hamelin, Laval, Professor R. Garry, Montreal, Dr. B. Zaborski and Professor T. Hills, McGill, Dr. T. Weir, Manitoba, and Dr. N. Scarfe, British Columbia. The Department of External Affairs named Mr. D. Doherty, geographer, who was on the Embassy staff in Rio de Janeiro.

Several years of preparation went into local arrangements in Brazil, headed by Professor Hilgard O'Reilly Sternberg of the University of Brazil. The meetings were held in the spectacular setting of Rio de Janeiro harbour, which lived up to its scenic reputation. Headquarters for the congress was the government Naval Training School, which stands like a fortress on a former island, now connected to the mainland by reclaimed land, in Rio harbour. Every morning delegates, who were given free accommodation at the school, had an unforgettable panorama of the tall buildings and apartment houses of Rio de Janeiro shining in the morning sun. These striking examples of progressive modern architecture were backed by the steep forested hills, topped by Corcovado Peak with the huge statue of Christ, and flanked on the east by the famous pointed peak of the "Sugar Loaf". To the west, haze and smoke indicated the city's industrial areas which rank second to those of Sao Paulo for their manufacturing importance to Brazil.

Throughout the city beautiful wide boulevards and multi-lane highways show what Rio de Janeiro is doing to solve some of the serious transport problems caused by more than two million people crowding into a topographically scenic, but restricted, site. In the "rush" hours of the morning and late afternoon the speeding, crowded traffic was frightening to a Canadian — even one familiar with notorious Montreal driving! Because of the lack of level land, housing has gone "up" in Rio de Janeiro, and miles of tall apartment buildings are the typical homes of the commercial class. The poor people of the labouring class live as squatters on the hillsides in densely crowded shack towns, called *favellas*.

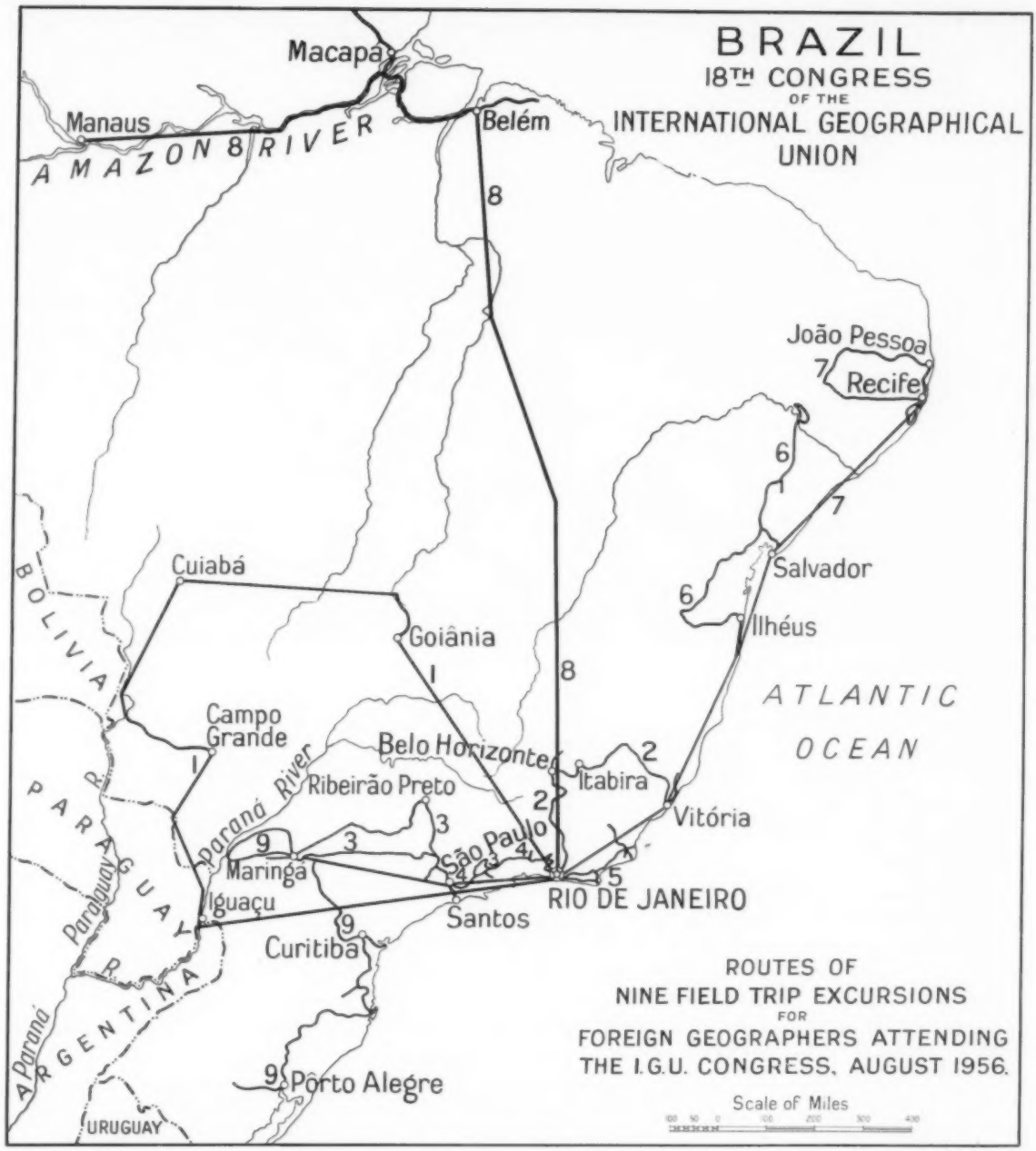
Prior to the meetings, and also afterwards, the Brazilian geographers organized nine field excursions so that foreign geographers could learn something of the Brazilian landscape. Thanks to reductions granted by transport companies and donations by Brazilian and local governments, the cost of these field trips was kept to a minimum for the visiting geographers. For example, excursion number three, which I accompanied,[1] consisting of twenty geographers, was the guest of the city of Ribeirao Preto, a land development company in Paraná State, and a large private *fazenda* near Campinas. In each case the warm hospitality could be measured by the enormous dinners, the good accommodation, and the sincere friendliness and eagerness to show new developments in Brazil.

Geographers had a choice of one of four excursions before the congress, each lasting from one to two weeks, and a selection of one out of five field trips after the congress, extending from one to four weeks. The routes of these excursions are shown on the accompanying map. which indicates the many areas of Brazil which could appeal to the varying interests of foreign geographers. Each excursion was organized and led by one or more outstanding Brazilian geographers, who put a great deal of time and energy into advance preparation and the writing of detailed guide-books.

As the host country for the first meeting of a world geography organization in the Southern Hemisphere, Brazil graciously treated the congress as an honour. In Rio de Janeiro, officials both of the federal government and of the city organized receptions and entertainment, and throughout the country the field excursions were well known and the visiting geographers were warmly met. The Brazilian Government issued commemorative stamps for the congress, featuring the large "g."

Geographers from all over the world began to assemble in Rio de Janeiro in early August. Registration started officially on 8 August,

[1] Professor Robinson will discuss the Coffee Plateau of Brazil in a later article in the *Journal*.



C. G. J. map

and before the end of the congress there were about 350 geographers from fifty foreign countries at the meeting, and about 650 Brazilian geographers, many of whom were student members. On 9 August the President of Brazil, Mr. J. Kubitschek, held a morning reception at the President's palace, at which the heads of each national delegation were formally presented. In the afternoon official delegates were introduced to His Excellency, the Mayor of the Federal District of Rio de Janeiro. A luxurious reception for all delegates was given in the palace in the late afternoon, and the day of formality was crowned by the official evening opening of the congress by President Kubitschek at the Rio Municipal Theatre.

A great deal of typical European pomp and colour accompanied the official opening. Executive members of the I.G.U. were met outside the theatre by cheering crowds of "Cariocans" (residents of Rio) and led up a plush red carpet

Officials at the opening ceremony of the International Geographical Union Congress. Left to right:— Professor O. Ribeiro (Portugal), vice-president, I.G.U.; M. Soares, Brazilian Minister of Foreign Affairs; Professor D. Stamp (England), president, I.G.U.; Jusciliuo Kubitschek, President of Brazil; J. P. Ferreira, Director, Brazil Institute of Geography and Economics; Cardinal D. J. Camara, Archbishop of Rio de Janeiro; General C. Montalio, Ambassador from Chile.

Agencia Nacional Serviço de Imprensa, Brazil

between loudly playing military bands to the ornate Municipal Theatre. Guards in colourful nineteenth century military uniforms formed a line on both sides of the broad curving staircase inside. Television cameras were everywhere and flash bulbs popped continually. At the proper moment, the President's car arrived, the bands played the Brazilian national anthem as the smiling Mr. Kubitschek alighted, and the crowd broke out into cheers which indicated the President's popularity. After official handshakes, repeated several times for the photographers, the party assembled on the long stage of the theatre before a capacity audience of delegates and townspeople. The curtain was pulled back to give a dramatic view of a long table with about twenty executive members of the I.G.U., government officials, and others. The table was completely clothed top and front by hundreds of colourful flowers, with the "g" emblem of the congress in blossoms in the centre.

Friday, 10 August, was a day of more ceremonies. In the morning the Geographical and Cartographic Exhibit was opened in the ultra-modern building housing the Ministry of Education and Culture. Since the Canadian exhibit had arrived promptly when requested before the congress, Canada had the prize position in the display, at the head of the stairway entrance. The Canadian display was highlighted by maps from the forthcoming *Atlas of Canada* and by pages from the recently published *Atlas of British Columbia*.

In the late afternoon the General Assembly of the congress convened in the assembly hall of the Ministry of Education and Culture, presided over by Dr. Dudley Stamp of Great Britain. Delegates were supplied with earphones and could have simultaneous translations in any of the five official languages of all statements and comments made during the Assembly. President Stamp and Secretary Kimble reported on progress and problems of the International Geographical Union since the last meeting four years ago, and gave notice of matters which were to be discussed by delegations and voted upon at the General Assembly on the last day of the congress. Delegates voted on the admission of new

countries to the Union, giving almost unanimous support to re-entry of the Soviet Union, and new memberships to Iceland, Hungary and Ethiopia. A new category of associate member was created for countries where the study of geography has recently been established, and admitted were French West Africa, Nigeria, Sudan, Uganda, Kenya and Iraq.

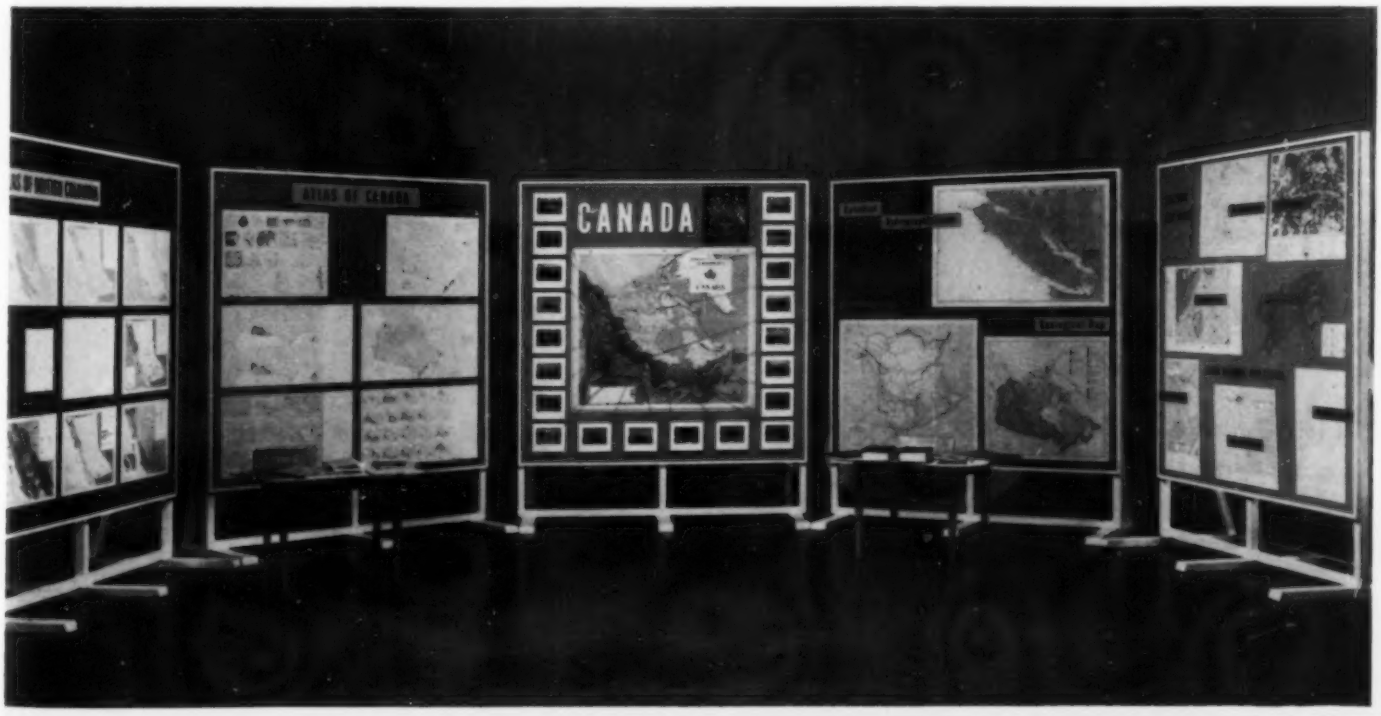
On Saturday, 11 August, the congress started its official work, which was carried on by section and commission meetings. Because of the wide variety of topics and interests which may appear under a geographical approach, the papers and discussions were divided into section meetings, four of which were held concurrently in different lecture rooms of the Naval School. Delegates selected from the program the papers and topics in which they were interested, and then moved from room to room as the papers were presented and discussed. Section meetings were held under the topics of: Economic Geography, Hydrography, Historical and Political Geography, Geography of Population and Settlement, Geomorphology, Climatology, Human Geography, Methodology and Teaching of Geography, Agricultural Geography, Medical Geography, Regional Geography, Cartography and Photography, and Biogeography. Papers under certain of these topics outlining Canadian interest or information were given by Brouillette, Robinson, Zaborski, Weir, Nicholson, and Garry.

Between congresses, work sponsored by the I.G.U. is carried out by commissions. These commissions are approved for financial support, if required, by the General Assembly, and have often received grants from the United Nations Educational, Scientific and Cultural Organization. They consist of five or six specialists on certain topics who carry out research themselves, or direct students in these fields, and then report on their work which has probably extended the frontiers of knowledge. The commissions reporting to open meetings at the congress were on Evolution of Slopes, Correlation of Erosion Surfaces around the Atlantic, Karst Phenomena, Bibliography of Ancient Maps, Teaching of Geography, Coastal Sedimentation, Arid Zones, Periglacial Morphology, Medical Geography, Library Classification of Geographical and Cartographical Publications, and Inventory of World Land Use. Canadian interest in these commissions was expressed through Dean Neville Scarfe, who was Chairman of the Commission on the Teaching of Geography, and through the work of the federal Geographical Branch which carried out studies on arid zones, and the Inventory of World Land Use.

In addition to the section and commission meetings, the congress program included two

Canada's display of maps, atlases and geographical literature at the congress.

Department of External Affairs, Ottawa



general symposiums to which all delegates were invited, with simultaneous translations available by earphone. Topics discussed were "the problem of grasslands in tropical regions" and "contribution of geography to regional planning of tropical areas." Three general evening lectures were given by leading Brazilian professors on power, minerals, and settlement of Brazil. Twice during the week and on Sunday all meetings were cancelled and organized field trips by bus took delegates to different parts of beautiful Rio, and to the summer resort centres of Petrópolis and Teresópolis in the hills of the escarpment near Rio.

During the congress the Canadian delegates were the guests of several receptions, notably those of Mr. F. Charpentier, the Chargé d'Affaires of the Canadian Embassy; Mr. D. Doherty, geographer of the Embassy residing in Rio; the British Council representing British residents in Rio; the British Ambassador and Lady Thompson; and the U.S. Ambassador. The Brazilian Traction Company, a famous Canadian power company in Brazil, also arranged lunch and a tour of their impressive power plant near Rio.

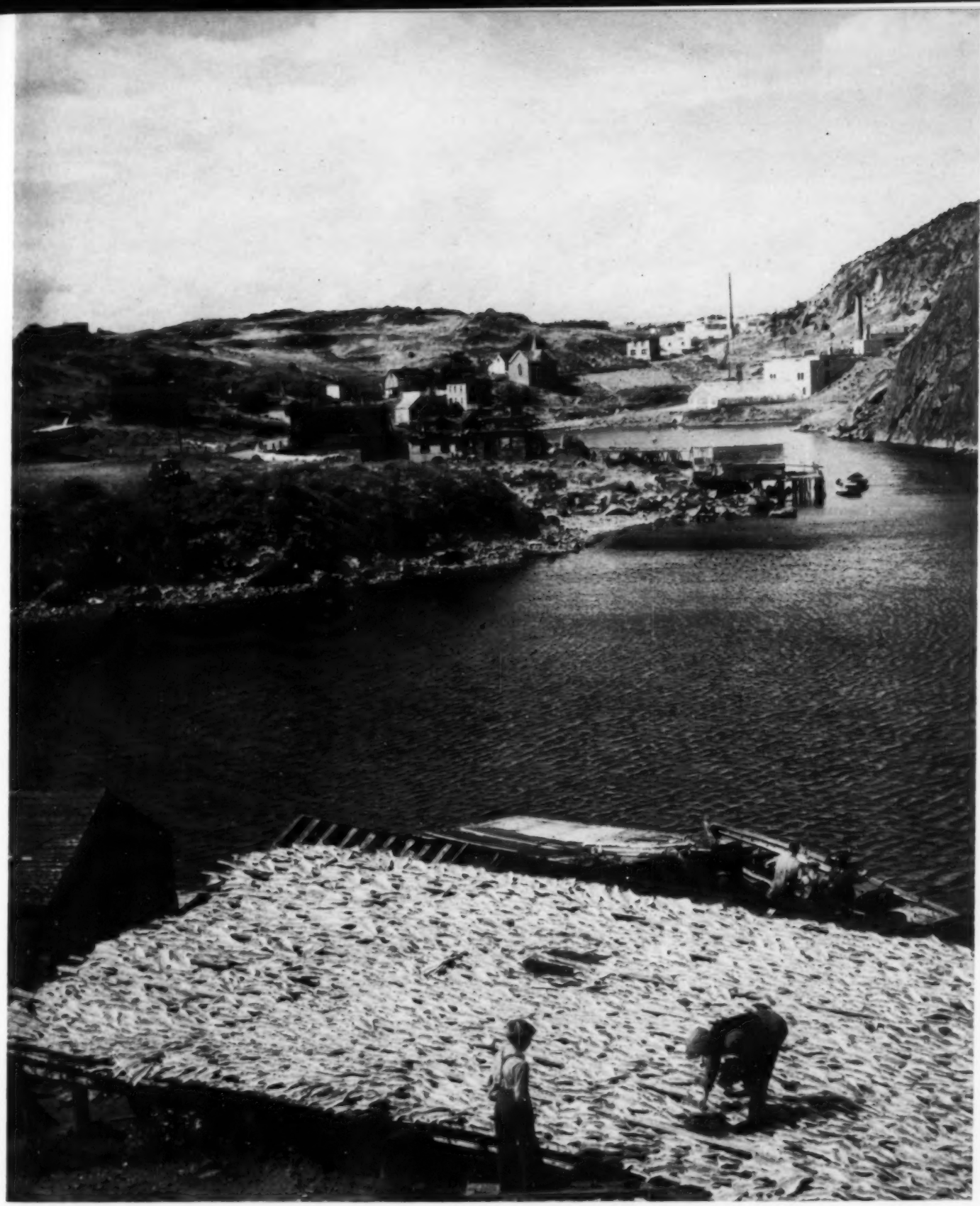
The congress closed on Saturday, 18 August, with a General Assembly where matters of I.G.U. business were discussed, and commissions for the next four years voted upon. All eleven commissions were asked to continue their studies. The executive of the I.G.U. added two new Commissions on Mapping of World Population and Studies of the Humid Tropics, and from suggestions from the Assembly were added Commissions to investigate Applied Geomorphology and National Atlases. For the Commission on the Teaching of Geography, Professor Brouillette succeeded Dean N. Scarfe, indicating Canada's interest and leadership in this important field.

The meeting confirmed the election of the new president, Dr. Hans Ahlman of Sweden. Dr. Ahlman is well known to geographers for his work on glaciology, and for the past six years had been Swedish Ambassador to Norway. The new secretary was Dr. Hans Boesch of Switzerland. The congress voted to accept the joint invitation of the five Scandinavian countries to meet in Stockholm, Sweden, in 1960.

To Canadian delegates the I.G.U. Congress brought a knowledge of what geographers are doing and thinking in other parts of the world. This knowledge will permit the universities to evaluate their geography programs, with the realization that our Canadian geography is very similar to geography that is being taught and practised in other countries. Canadian professional and academic geographers are not "a new breed" but are simply practising the century-old principles of geography, with adaptations to our Canadian environment and interests. These principles, learned by Canadian geographers in the graduate schools of the United States, Great Britain, and France, as well as in Canada, have been perpetuated and revised in the congresses of the International Geographical Union.

We believe that the relatively large and strong Canadian delegation made a good impression for Canada among delegates of other countries. Some of the Canadians are already known internationally. In the present world political scene Canada is expected by others to play an important part, and it is equally true that our scientists should contribute and be known in international organizations.

From this particular congress, the Canadian delegates also gained some knowledge of Latin American geography from extensive personal travels and the organized field trips. These experiences will enrich lectures in Canadian universities, where it is important for trade and cultural reasons that we know something about the large Latin American area south of us. Many of the problems of Brazil, in particular, are similar to those of Canada, although in a different physical environment. Interior Brazil has problems of new and expanding cities, clearing of forest for agriculture in pioneer areas, and trying to settle and develop the tropical interior. All of these matters are problems of man's use of his environment, which is geography in its broadest sense. Practical problems of Canada's use of its environment may have some light thrown on them by knowledge of Brazil's (as well as other countries') progress and possible solutions.



Pictures of the Provinces—XI

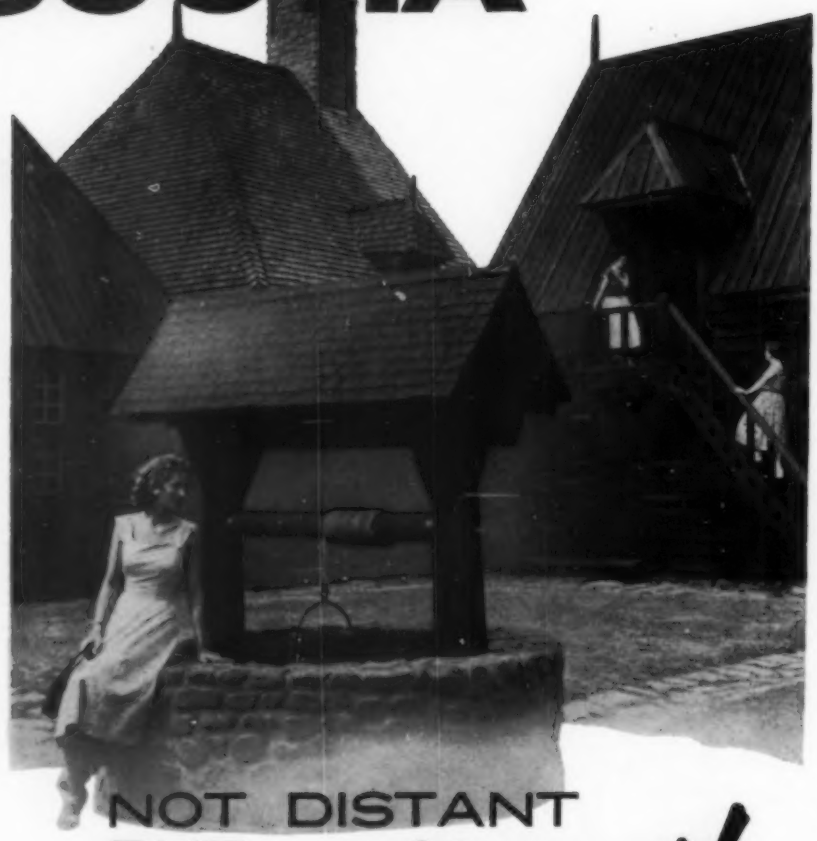
Blue water, grey rock and frame houses are typical of the coastal villages, or outports, of Newfoundland, where many a man depends on the sea for his living. Here fish are spread to dry in the sun. In the background may be seen the tall smoke-stacks of two local industries. Since 1949 there has been important industrial development in the province. A number of major industrial plants have been built

Most streams and rivers in Ontario's Bruce Peninsula turn westward to pour into Lake Huron. Many, like the Sauble River, are famous for their trout, and anglers come from afar to wet their lines in its currents. There is a highway to Tobermory at the tip of the Peninsula. Adelaide Leitch

Probably few people elsewhere in Canada and abroad realize that Saskatchewan has extensive forests, many attractive lakes and a number of delightful parks, for it is the rippling grain fields and homely grain elevators that are most familiar. Madge Lake in Duck Mountain Provincial Park, north-east of Yorkton, is a favourite of vacationers in summer. There are handsome stands of poplar and spruce close to the crescent-shaped bathing beach shown here on the north shore. Wild life is plentiful and the fishing is excellent.

Saskatchewan government

NOVA SCOTIA



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EDITOR'S NOTE-BOOK

Dr. W. R. Bird (*Nova Scotia Has Many Lights*), who lives in Halifax, is the author of several books and many short stories and magazine articles. Keenly interested in the history of the province, he is chairman of the Nova Scotia Historical Sites Advisory Committee. He is a past president of the Canadian Authors' Association.

* * *

Brigadier J. P. Carrière (*The Story of Ripple Rock*) until recently was Chief Engineer of the Harbours and Rivers Engineering Branch, Department of Public Works, Ottawa. In this capacity he was closely concerned with the project of removing the parts of Ripple Rock that are hazardous to navigation. Since writing the article he has left the department to become vice-president of Collet Frères, a construction firm in Montreal.

* * *

Mabel Jordon (*Canada Remembers David Thompson*), whose home is in Calgary, is a freelance writer with a special interest in the historical landmarks of Western Canada. She has visited many of these and has spent considerable time studying their historical background. Several of her articles have appeared in the Journal.

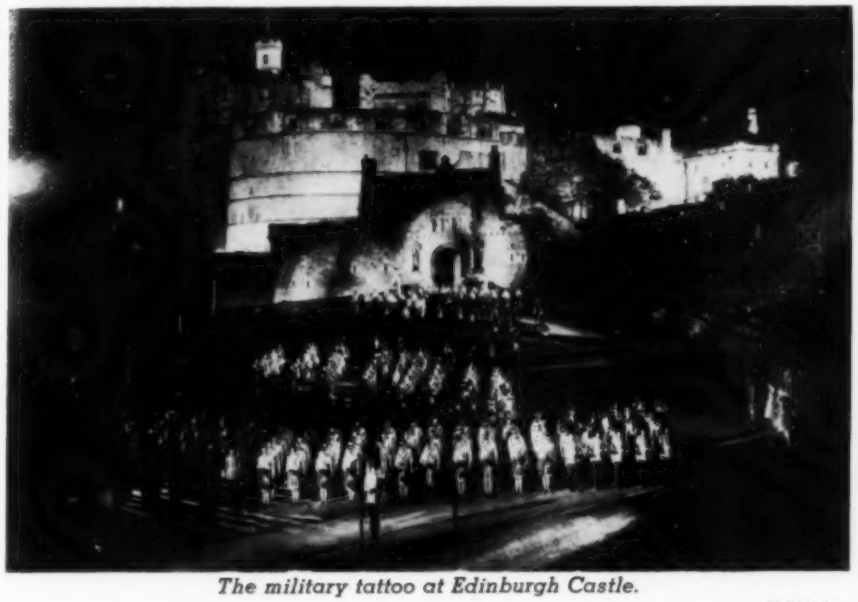
* * *

Dr. J. L. Robinson (*Eighteenth International Geographical Union Congress*), widely known as a geographer, lecturer and writer, attend the I.G.U. Congress in Rio de Janeiro last summer as the Society's official representative. Dr. Robinson is chairman of the Geography Division, Department of Geology and Geography, University of British Columbia, and also a member of our Editorial Committee. This year he is giving a special series of lectures at the University of Rochester.

ERRATUM

Vol. LIV, No. 2 Feb. 1957, p. VIII, caption for Travel Corner photograph should read: The Botanical Gardens, Kingstown.

THE TRAVEL CORNER



The military tattoo at Edinburgh Castle.

U.K.I.O.

The Feast of Summer Festivals

Apparently the modern traveller either has acquired a marked taste for festivals of different kinds or is being coaxed by numerous publicity agents to acquire one. At this time of year our Travel Corner is deluged with announcements about festivals being held during the summer in various corners of the world.

Perhaps The Festival of all the countless festivals in Europe and North America today is the International Music and Arts Festival at Edinburgh, Scotland. Certainly it is by far the most ambitious in scope. Its programs and pageantry have left vivid impressions upon the minds of thousands. If we had a book for every time a traveller has told us about the lone piper playing the pibroch lament on the ramparts of Edinburgh Castle while the lights at the windows were extinguished one after the other, we would have a fairly large library. Yet it is almost impossible to listen to that description without experiencing a sympathetic outbreak of goose-flesh.

This will be the eleventh year of the Edinburgh Festival. It will be held 8 August-7 September. As in the past, opening ceremonies will take place at St. Giles Cathedral. One of the special features of the program will be performances by La Piccalo Scala from the Teatro alla Scala of Milan. The group will present Menotti's *The Medium* and *Amahl and the Night Visitors*, Bellini's *La Sonnambula* and Donnezetti's *Don Pasquale*.

Among the well-known orchestral groups taking part in the festival are the Bavarian Radio Symphony Orchestra, the Philharmonic Orchestra and Concertgebouw of Amsterdam. Recitals will be given by Clara Haskil, Lois Marshall, Anton Dermota, Janos Starker and others. The Hollywood String Quartet and the Dennis Brain Wind Ensemble will give chamber music concerts. There will also be performances by the Royal Swedish Ballet, the Grand Ballet Du Marquis du Cuevas and the Ballets de Keita Fodeba.

The theatrical portion of the program includes two French plays by the Compagnie Renaud-Barrault, two American plays by the American Drama Company, the premières of two English plays, and a special Scottish drama commissioned by the Edinburgh Festival Society. An international film festival will be held concurrently with the Music and Arts Festival. In addition there will be art exhibitions, Highland Games and a Military Tattoo.

Tickets for the festival go on sale 1st April 1957. A brochure containing order forms for tickets and accommodation in Edinburgh and giving full details of the program, dates and prices may be obtained from the Festival Office, Synod Hall, Castle Terrace, Edinburgh 1.

While there are other festivals in Great Britain and on the Continent, the majority of our readers who will not be crossing the Atlantic, may be more interested in what awaits them nearer home. Of the North American summer festivals there are two we would like to mention at this time, one at Stratford, Ontario, the other at Stratford, Connecticut.

At Stratford, Ontario a theatre, costing $1,500,000 has been under construction since last September. It will be used this season instead of the old theatre-tent for Stratford's Shakespearean Festival, which runs from 1 July to 7 September. Under the direction of Michael Langham, *Hamlet* will be presented. *Twelfth Night*, the other play on the program, will be directed by Tyrone Guthrie. Stage settings will be designed by Desmond Heeley and Tanya Moiseiwitsch. The festival company includes Christopher Plummer, Siobhan McKenaa, Douglas Campbell and Frances Hyland. A brochure containing details about the festival may be obtained from the Publicity Department, 109 Erie Street, Stratford, Ontario.

During the Stratford Music Festival (31 July—6 September) the English Opera Group will appear in *The Turn of the Screw*, conducted by the composer, Benjamin Britten. There will also be jazz concerts and performances by the Canadian Broad-

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- Urban Geography

STAFF

Professors Alexander, Olmstead, and Stone, all of the University faculty.

INFORMATION

For further information, write Director of Summer Sessions, The University of Wisconsin, Madison 6, Wisconsin, U.S.A.

1957 Summer Sessions

casting Corporation Orchestra. In addition, art and theatrical exhibitions have been arranged and an international film program.

On 22 June the American Shakespeare Festival Theatre and Academy will commence its season at Stratford, Connecticut. At the time this column went to press the name of only one of the three plays to be produced had been announced—*Othello*. Earl Hyman will appear in the title role and Alfred Drake will play Iago.

Improved Travel Facilities in Newfoundland

In the past travellers who entered Newfoundlqnd by way of Port aux Basques were apt to receive rather dark first impressions of the province. With the completion of the new Canadian National Railways terminal building, however, passengers can now await the arrival of boat or train in comfort. The building's public rooms include lounges, a waiting room and an attractive restaurant. Canadian National Railways has announced that there will be daily steamship service this summer between North Sydney, Nova Scotia and Port aux Basques, Newfoundland, and daily railway service from Port aux Basques to St. John's.

Motorists will be interested to learn that 237 of the total 590 miles of Trans-Canada Highway in the province have been graded. It is possible to drive from Port aux Basques to Corner Brook, but not from the latter to St. John's because there is still a fifty-six mile gap in the highway between Clarenville and Alexander Bay.

Polish Visas

Orbis, Poland's national travel office, has announced that Polish Consulates throughout the world will issue visas to tourists in eight days provided they first obtain Orbis coupons which represent payment in advance for accommodation and travel services in Poland. The coupons are offered by a number of travel agencies in Europe and North America. The visas will be granted irrespective of a traveller's permanent place of residence or citizenship. For example, Canadians may obtain them while in Europe by applying to the Polish Consulates in London, Rome, Paris and elsewhere.

A Brief Calendar of Canadian Events

25-28 March—Winter Fair and Light Horse Show, Regina, Sask.

(*Continued on page IX*)

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WINGS OF THE WORLD'S GREATEST TRAVEL SYSTEM

(*Continued from page* VII)

1-8 April—Manitoba Winter Fair, Brandon.

1-13 April—Manitoba Music Festival, Winnipeg.

28 April-4 May—Rodeo, Edmonton, Alta.

20-26 May—Dominion Drama Festival, Edmonton, Alta.

17 June-7 September—Banff School of Fine Arts, Banff.

1 July—Gathering of the Clans and Fishermen's Regatta, Pugwash, N.S.

1 July-7 September—Stratford Shakespearean Festival, Stratford, Ont.

8-13 July—Calgary Stampede.

6-11 August—Nova Scotia's Gaelic Mod, St. Ann's, Cape Breton Island.

11-14 September International Tuna Cup Match, Wedgeport, N.S.

* * *

AMONGST THE NEW BOOKS

Executive Performance and Leadership

by Carroll L. Shartle

(Prentice-Hall Inc., New Jersey. $4.50)

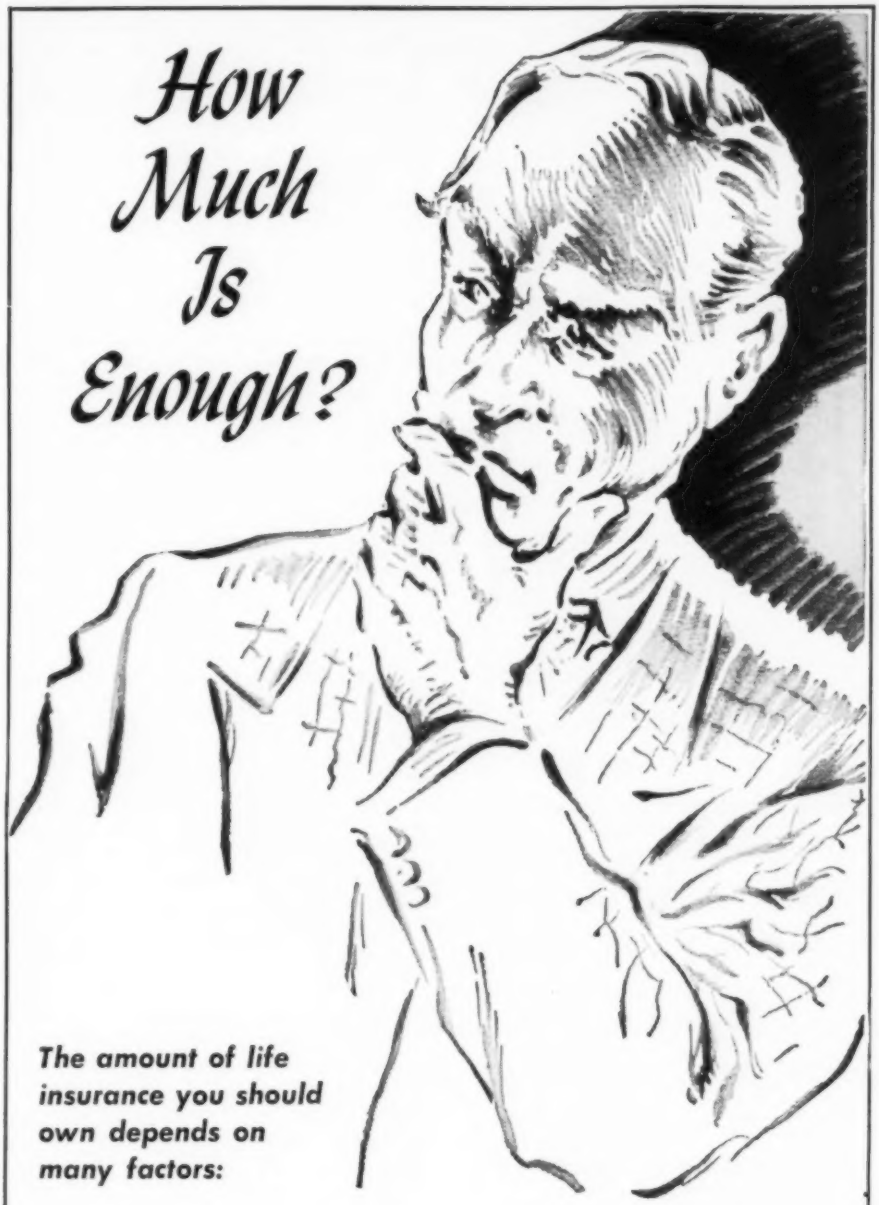
Whenever and wherever animals live gregariously social hierarchy is immanent. Even a flock of poultry has a peck order and a shoal of fish a nip order. When the group is large the order structure is more often pyramidal than linear. The pattern may be faint and mutable as among baboons, or sharp and inflexible as in Nazidom. Leadership itself has a wide natural variation; the extremes might be represented by the almost powerless spokesmen of certain uncompromisingly democratic Amerindian tribes on the one hand, and on the other by the Oriental despot whose claim to divinity is taken so seriously that his slightest and craziest whim is binding on his subjects. As a society grows in complexity, as it breeds more and larger (and overlapping) subgroups, so organization, decision making, and leadership become more consequential. In particular the problem of assessing the quality of leadership acquires urgency.

Looking back, we are almost surprised at how far Western society developed with a minimum of attention given to problems of leader selection and appraisal, and of organizational efficiency. The British Army went through some rather successful campaigns at a time when its ranks were filled with harshly disciplined riff-raff and when the criterion of officer material was to be of good family and to

have a little money. Commerce and industry were built up under hereditary leadership with ever more disagreeable working conditions the farther down the scale one was stuck. The nineteenth century advances in political democracy and humanics spawned the realization that concern for the welfare of the lower strata could pay off in terms of increased efficiency and social stability. Later, methods were devised to measure, perhaps crudely, the efficiency and value of the factory worker and even of the man at the desk in the general office. For some time now a good deal of hard thinking has been going into ways of evaluating the operations of entire businesses, administrations, and institutions. However, the thought has tended to soften near the summits. Not long ago *The New Yorker* ran a cartoon showing two intense-looking experts at the desk of a company president; and one is saying, "Now, before we get our efficiency study under way, Mr. Howard, just how high up in your organization do you want us to go?" Mr. Howard's jutting jaw and darkening brows tell us better than mere words just what he thinks of the implication that the top bananas need investigating. Yet it is abundantly clear that the more influential the man the more important it is to try to evaluate his worth to the organization. *Executive Performance and Leadership* is a primer on this subject.

Dr. Shartle, who has spent nearly thirty years observing in many capacities the operation of groups and organizations, is now chairman of an interdisciplinary Personnel Research Board set up by Ohio State University. His book is not an official report of this body but it does survey and synopsize the findings to date, and there are useful leads into the technical literature for the reader who wishes to plunge into deeper waters. The opening chapters spell out the problems, settle the terminology, and discuss several environments in which the issues have to be studied. The middle chapters are mainly descriptive of how executives work, and we are gradually taken over into the investigational field — reports of work done and pointers to work that still needs doing — that dominates the last chapters.

In effect the book gets more interesting as it goes along; indeed the opening pages contain so many statements of the obvious that a busy reader would be discouraged from pressing on. What is one expected to make, for instance, of the following solemnity? An executive is speaking: "We must make an important decision affecting this organization soon



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and I wish I knew what the general situation will be. The best we can do is assemble what we know and take the action that seems most likely to lead to the outcome we want". On the other hand it is really illuminating to learn, in chapter eleven, how experimentation has been introduced into what seems unpromising territory for the exercise of the number one scientific technique.

Presumably executives themselves have most to learn from this book. But the general reader, being almost certainly a member of some organization, at some level or other, can also profit. If the nations of the earth have anything in common today, it is that they are all becoming managerial societies. We need to understand the how and why of management as never before.

N. T. GRIDGEMAN

* * *

Formation et Transformation des Espèces

by Guy Dingemans

(Armand Colin, Paris. $11.20)

This large work, which carries as sub-titles *The Tragedy of the Universe* and *The Secrets of Life*, is one of a series of which the first volume is entitled *Notre Planète* and deals with "the formation and transformation of the continents"; the second, *Les Secrets de la Vie*, deals with the general problem of life and evolution, while the third, *Les Secrets de l'Homme* is to explain the formation and transformation of races and the origin of the human species. Later, the author proposes to publish volumes on the formation and transformation of the "infinitely small" and the "infinitely great".

In the introduction to the volume now considered, after a brief and very inaccurate account of the development of science, the author defines his objective, which is the preparation of a synthesis of scientific knowledge, by the examination and reconciliation of all the existing theories. His treatise might therefore take its title from one of the ancient encyclopedias and be called—*De omni re scibili*. His intention, which is certainly admirable, is to relieve the intellectual distress which has enveloped the public mind because of the enormous mass of factual detail and complex theory produced by modern science.

It is obvious that the author has attempted an impossible task even if he were well qualified for it. The state of science at the present time does not permit of a satisfactory synthetic treatment. It is possible to write good books for popular use on restricted

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subjects, such as the birds of Ontario or the habits of insects or the embryological development of animals, provided the author sticks to the facts. But the great problems of general biology, such as the problem of evolution, do not really lend themselves to such treatment. In order to produce a readable work, authors are inevitably led to eliminate or gloss over the many gaps in the argument due to the absence of facts and to pass from theorizing to dogmatizing. What they thus create is simply a myth, in other words, a plausible story which appears to explain everything and which gains general acceptance because the public is quite unable to analyse and verify it.

The metaphorical and dithyrambic style adopted by Dr. Dingemans is only too well adapted to his mythical treatment of biology. However, two specific examples, taken at random, will serve to exemplify his method. The cover of the work carries a curious picture, reproduced from Figure 17 (page 131) purporting to represent a group of Cro-Magnons repelling an attack by a group of Neanderthals (described in the text as "horrible personages") at the specific date of 80,000 B.C. The picture is itself faintly reminiscent of certain ancient battle scenes, such as those portrayed on Egyptian or Assyrian monuments or on Greek vases. It conveys and was doubtlesly intended to convey the impression of an actual "primitive" representation, produced by an eyewitness. The second example concerns the representation of the development of living forms. As is well known, the pre-Cambrian deposits present practically no recognizable fossils, while in the Cambrian rocks practically all the invertebrate groups suddenly appear. To smooth out this transition, the author speaks first of a quite imaginary stage of protein viruses and ultra-viruses and then assembles all the evidence of the existence of higher forms, neglecting to mention how very dubious this is. Finally, he presents a two-page plate (Figure 2) on which, opposite the section labelled "Algonquin", is depicted an enormous variety of invertebrate forms ranging from bacteria to Amphioxus and Balanoglossus. The text agrees since it asserts that the pre-Cambrian fauna and flora were already extremely rich, varied and complex.

It must, of course, be admitted that in the course of compiling his treatise Dr. Dingemans has gathered some useful references which might otherwise escape attention; but it is difficult to find any other reasons for recommending it.

W. R. THOMSPON

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China's Changing Map
by T. Shabad
(Praeger, New York. $7.50)

This book is a welcome addition to our incomplete and scanty knowledge of the political and economic geography of the Chinese Peoples' Republic; or in more prosaic terms, Communist China. Theodore Shabad is a member of the *New York Times* foreign news desk and is perhaps best known to the academic profession for his book on the geography of the U.S.S.R. In writing the present volume he has therefore been able to draw upon his familiarity with Soviet affairs in the interpretation of Chinese conditions.

"In writing this book, the author has based himself almost entirely on Communist sources, both Chinese and Soviet. Most of the information, moreover, was gathered from newspapers and periodicals." (page 271). Here lies much of the strength and the weakness of the book, because the reader cannot go back to the source materials — there being no footnotes or references — even if there were, few readers could avail themselves of the original sources. There is therefore no method whereby the reliability of statements can be judged. For example, did a particular statement originate in a newspaper, illustrated popular magazine, or as a quotation from a scientific periodical?

Shabad makes no bibliographic reference to any non-communist publications. This seems unfortunate, because there is quite an extensive non-communist literature on Communist China. For example, several excellent journals dealing with political and economic conditions are published in Hong Kong (to name two, the *China News Analysis* and *Far Eastern Economic Review*); there are periodicals devoted to Asian Affairs published in many countries such as India, France and the United Kingdom; and there are publications by non-communist Chinese in Formosa. This reviewer feels that the material covered in *China's Changing Map* is excellent so far as it goes, but it does not go far enough. What seems to be largely lacking is a critical comment and interpretation of the material that is presented and the use of other sources which would have strengthened the book.

The book is divided into two parts. Part one gives a general survey of China as a whole. Chapter one deals with *The Physical Setting* with a brief discussion of location, boundaries, topography, coasts, climate, rivers, soils and vegetation. The contents of chapter one are generally available in standard works on China. In chapter two, there is a good discussion of *The Political Framework* and the 1953 population census. Particular attention is given to the ethnic groups and national autonomous areas. *The Economic Pattern* (of industry, agriculture, transportation, and foreign trade) is covered in chapter three. The short page-long section on foreign trade seems quite inadequate compared to its importance and could well be lengthened. There is no real discussion of China's capacity to trade nor of actual and potential trade with other nations. Part two gives a regional treatment of the country. Shabad has divided China into the more or less traditional geographic regions of the North China Plain, Lower Yangtze Plain, Szechwan Basin and so forth, but the boundaries which are based upon provincial groupings rarely coincide with the accepted regional boundaries. The regional grouping is therefore very rough indeed. For example, Hopei, Honan, and Shantung Provinces are grouped into the region of the North China Plain, even though one-third of the total area is hilly to mountainous and lies outside the plain. Within each region, such as the North China Plain, Shabad discusses the component provinces one by one, giving information on many aspects such as terrain, agriculture, population, industries, resources, new developments, and so on. The province-by-province treatment of China is an excellent feature of the book for any person wishing to obtain detailed information on a particular area; it is also a logical arrangement from the viewpoint of the author, because Chinese statistics are usually published on a provincial basis.

There are four general maps of China covering the physical features, political divisions, economic centres, and transportation lines. Then follow twelve regional maps, each one covering a regional chapter of the book. The maps are excellent for locational purposes as they show many hard-to-find place names, new railway lines, industries and so forth. From the viewpoint of cartographic design they could stand considerable improvement.

The index is very good — both for place names and topics. Place names are cross-referenced when the two common systems of spelling Chinese place names (Wade — Giles System and Postal System) are used.

Factual errors are few. Of much more serious consequence for the reader who is not abreast of past and present developments is the lack of a balanced comment and interpretation of the data presented. Although the

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book deals essentially with China since 1949, we cannot understand the events of seven years by largely ignoring those of the preceding centuries. To be specific, three of the most "successful" achievements of the communists have been in land reform, railway transportation, and flood control. The communist figures for land ownership (for example, 10 per cent of the peasants owning 75 per cent of the land, see page 71) are given without comment, even though the figures depart widely from those presented by very competent and experienced field investigators like J. L. Buck. Likewise the discussion of collectivization, which is a foundation-stone of communist land reform policy, is sketchy and incomplete (see pages 71-72). The reader learns almost nothing about the impact of collectivization. The reported rapid upsurge of agricultural producers co-operatives in the latter half of 1955 probably existed largely on paper only, although there seems little doubt of the eventual reality of the trend. The figure of 24,590,000 families (page 72) constituted in full-fledged collectives of the Soviet type seems too high, even using communist figures as a basis for judgment. The communists have made very rapid and spectacular advances in railway construction and flood control; but again, there is little historical interpretation of these developments. The present government did not start their construction, *ab initio*, but based much of it upon the recommendations and technical studies made by engineers of many nationalities in the years prior to 1949. Such recognition of pre-communist planning would show present progress in better perspective.

In perusing the book the reader should constantly bear in mind the specific objective set by Shabad to portray the political and economic changes since 1949 with a minimum of historical background. When viewed in this light, the book is a valuable reference volume for post-1949 changes in China.

J. R. MACKAY

* * *

Birthplace of the Winds

by Ted Banks II

(Thomas Y. Crowell, New York. $4.50)

Scientific competence and literary proficiency are different enough accomplishments that their combined attainment is not to be taken for granted. Laymen who read *Birthplace of the Winds* may feel unable to judge the botanical or anthropological importance of Mr. Banks' work, but chances are they will feel rewarded by a good story well told.

This is the account of a 1948 expedition to the Aleutian Islands to collect botanical specimens and explore burial caves. It started out as a plan in the mind of a serviceman whose interest in burial caves during a wartime stay on the Aleutians remained with him in his later studies at the University of Michigan. "Expedition" became an almost exaggerated name for his quest. His party never numbered more than two and dropped to one; its financing started at $300 and, judged by accounts of bureaucratic indifference and scientific sabotage, its accomplishment on any scale was a minor miracle born of the author's dogged persistence and good luck.

Those with patience may follow Mr. Bank diligently on his collecting tours throughout the Aleutians with the aid of detailed maps provided for the purpose. The average reader is more likely to take a general interest in the field work and use the book more as a readable introduction to the people and life on this particularly remote island chain. He will probably share Mr. Banks' disquiet about the Aleuts who have suffered more than their share from exploitation and indifference. It appears that in two hundred years their numbers have dropped from 20,000 to less than 1,000. Perhaps equally serious, those who remain have lost an old life without gaining any secure foothold on a new. Mr. Banks does not hide his prejudices, and it is difficult to judge whether he is more scathing about the ravages of the brutal military or the well-meaning pedagogues. Perhaps the bitterest comment running through the book is the shame which a people has learned to hold for its past. No part of the changing life of Canadian Eskimos is easy enough to encourage smugness, but we may find some satisfaction in the fact that fate has made the problems before our northern citizens simple by comparison.

Though the observations on the Aleuts provide some of the most interesting material in *Birthplace of the Winds*, Mr. Banks has contrived to write sufficient adventure and suspense into his quest for ancient mummies to provide a fast-flowing tale. Whatever scientific significance the discovery may have, it may well be that the expedition will have justified itself by its success in bringing to the public this sympathetic commentary on a part of the Aleutians and their people. Good prose is supplemented by excellent photographs and drawings.

R. A. J. PHILLIPS